

STATUS REVIEW OF Allotropa virgata

U.S.D.A. FOREST SERVICE - REGION 1

BITTERROOT AND DEERLODGE

NATIONAL FORESTS

MONTANA

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I. SUMMARY

Allotropa virgata occurs primarily west of the Cascade and Sierra Nevada mountains from British Columbia to northern California. Disjunct populations occur in southwestern Montana and adjacent Idaho. The plant is a Region 1 sensitive species and is ranked G4/S1 in both Montana and Idaho. The first record of the species from Montana was in 1974. Subsequent survey work has located 27 populations in southwestern Montana on the Beaverhead, Bitterroot and Deerlodge national forests, including some timber sale blocks.

In Montana, Allotropa virgata populations occur most often in Abies lasiocarpa/Xerophyllum tenax or Abies lasiocarpa/Vaccinium scoparium habitat types. The dominant canopy tree is usually Pinus contorta with Pseudotsuga menziesii often co-dominant. Stand age is 120-330 years with an average of about 200 years. Understory vegetation cover at these sites is generally sparse. Populations generally occur on moderate slopes and southerly aspects are most common.

Allotropa virgata is obligately dependent on an association with a mycorrhizal fungus which in turn is associated with a tree, likely lodgepole pine (Pinus contorta) or Douglas-fir (Pseudotsuga menziesii). It is thus, highly sensitive to the loss of these canopy trees whether through timber harvest or stand-replacing fire. Several of the current locations of Allotropa virgata are within proposed timber sales.

Populations of Allotropa virgata are characteristically small with most being fewer than 100 stalks. Many populations consist of fewer than 5 stalks. These small populations are often scattered across the landscape in large areas of seemingly suitable habitat. This suggests that the habitat requirements of the species are quite specific and may relate to the occurrence of a suitable fungal partner.

Management planning should take all Montana sites into account in order to maintain viable populations. Field surveys should be continued for additional populations on the Beaverhead, Bitterroot and Deerlodge National Forests. Monitoring of existing populations should be continued and expanded. Additionally, the information gathered in the survey and monitoring activities recommended above should be used to prepare a species management guide for Allotropa virgata. The guide should be prepared in cooperation with the Nez Perce National Forest and the Idaho Conservation Data Center and should include the Idaho populations in the strategy.

II. SPECIES INFORMATION

A. CLASSIFICATION

1. SCIENTIFIC NAME: Allotropa virgata T. & G. ex Gray
2. COMMON NAME: candystick, sugarstick (Hitchcock *et al.* 1959).
3. FAMILY: Ericaceae (Heath Family).
4. GENUS: Allotropa virgata is the only member of this monotypic genus (Wallace 1975).
5. SPECIES: Allotropa virgata was first collected by the Wilkes Expedition in the Cascade Mountains of Washington in the late 1800's (Hitchcock *et al.* 1959). The first collection in Montana (Stickney (100b), MRC) was from the Bitterroot Mountains, St. Mary Peak, Ravalli County in 1965. First records for Idaho were in Idaho County, Selway River valley (Habeck (2503), MRC) in 1972. Prior to this, A. virgata was known only from California to British Columbia at low elevations in the Sierra Nevada, Cascade Mountains, and Coast Ranges (Steele and Stickney 1974).

B. PRESENT LEGAL OR OTHER FORMAL STATUS

1. FEDERAL STATUS

- a. U.S. FISH AND WILDLIFE SERVICE: None.
- b. U.S. FOREST SERVICE: Allotropa virgata is currently on the sensitive plant species list of Regions 1 and 4 of the U.S. Forest Service. Agency objectives and policy in the 1984 Forest Service Manual provide for the management and protection of sensitive species (Section 2670.32). Under these guidelines, the U.S. Forest Service is to "avoid or minimize impacts to species whose viability has been identified as a concern" (2670.32.2).

2. STATES:

Globally, this species is ranked by the Idaho Natural Heritage Program as "apparently secure = G4, although it may be quite rare in parts of its range, especially at the periphery" (Moseley and Groves 1990).

Montana: Allotropa virgata is currently ranked as critically imperiled in Montana (state rank S1 = 5 or fewer occurrences) (Achuff 1991). Survey work in 1991 found 11 new, large populations for a total of 27 populations. The state rank will be revised to S3 (21-100 occurrences).

Idaho: This species is on the monitor list in Idaho where it is ranked as a State Priority 2 species (Moseley and Groves 1990), "taxa likely to be classified as Priority 1 within the foreseeable future in Idaho, if factors contributing to their population decline or habitat degradation or loss continue." It is currently known from about 45 locations in the state, all in Idaho County (Lichthardt and Mancuso 1991).

C. DESCRIPTION

1. **GENERAL NONTECHNICAL DESCRIPTION:** Allotropa virgata is a striking plant, most notable for the thick reddish-brown and off-white candy-striped stems that are up to ca. 15.5 inches (40 cm) tall. It lacks green coloration. Single stems or clusters of stems arise from deep-seated, branching roots. The unbranched stems bear numerous flowers near the top. Flowers face away from the stem but do not droop and each is composed of 5 sepals that are white to pinkish or brown. Stems from previous years are often present. These are dark reddish-brown and often hollow (Lichthardt and Mancuso 1991, Hitchcock *et al.* 1959)
2. **TECHNICAL DESCRIPTION:** Achlorophyllous, simple-stemmed herbs with single to numerous stems from a diffuse, deep-seated root system with branch roots and adventitious buds at intervals along its length. Plants 10-40 cm tall, stems white and pink-striped, 5-10 mm thick; leaves linear-lanceolate; flowers in terminal spikelike racemes, 5-20 cm long, axillary and exceeded by the subtending bract, often with 1-2 bracteoles below the calyx; sepals 5, distinct, white or pinkish to brownish, ca. 5 mm long; corolla lacking; stamens 10, without appendages, purplish, opening by basal (falsely terminal) pores, from about equal to twice as long as the sepals; pistil 5-carpellary, styles very short, stigma shallowly 5-lobed; ovary superior, 5-celled, with axile placentation; fruit a capsule (Hitchcock *et al.* 1959)
3. **LOCAL FIELD CHARACTERS:** Allotropa virgata is distinguished from other achlorophyllous members of the Ericaceae by longitudinally pink and white-striped

stems and the lack of a true corolla. It often occurs with, but is easily distinguished from, Hypopitys monotropa which usually has a four-merous perianth, anthers that open by a continuous full-length slit across the top, and stems that are white, yellowish or pinkish. Pterospora andromedea also occurs with A. virgata, but differs by being usually taller (ca. 11.5-39 inches (30-100 cm)), with five sepals and an urn-shaped (connate) five-lobed corolla that is pendulous, with bracts along the stem that are much reduced, and with anthers that are awned on the back.

D. GEOGRAPHICAL DISTRIBUTION

1. **RANGE:** Allotropa virgata is known from southwestern British Columbia and south through the Cascades, on both the east and west sides, into the Sierra Nevada and Coast Ranges of California (Hitchcock *et al.* 1959). It is disjunct in east-central Idaho (Idaho County) and western Montana (Ravalli, Granite and Beaverhead counties) where it is one of several species that have coastal affinities and a similar disjunct pattern (Lorain 1988).
2. **CURRENT SITES:** In Montana, it is currently known from 27 populations in Ravalli, Granite and Beaverhead counties. Prior to the 1991 field season, A. virgata was known from 16 locations, only three of which contained more than a few plants. In 1991, surveys conducted by personnel of the Lolo and Bitterroot national forests and the Montana Natural Heritage Program located nine more populations, many of which contained up to several hundred individual plants.
3. **HISTORICAL SITES:** Several populations were last observed in the mid-1970's but none should be considered historical.
4. **UNVERIFIED/UNDOCUMENTED REPORTS:** None.
5. **AREAS SURVEYED BUT SPECIES NOT LOCATED:**

Bitterroot National Forest

T05N R18W SECTION 33, NW $\frac{1}{4}$ SE $\frac{1}{4}$
T05N R18W SECTION 33, NE $\frac{1}{4}$ SE $\frac{1}{4}$
T05N R18W SECTION 34, SW $\frac{1}{4}$ NW $\frac{1}{4}$
T04N R18W SECTION 4, NW $\frac{1}{4}$ NW $\frac{1}{4}$
T04N R21W SECTION 20, NW $\frac{1}{4}$ SW $\frac{1}{4}$
T04N R21W SECTION 6, NE $\frac{1}{4}$ NW $\frac{1}{4}$
T04N R22W SECTION 1, SE $\frac{1}{4}$ SE $\frac{1}{4}$
T04N R19W SECTION 4, S $\frac{1}{2}$ NW $\frac{1}{4}$

Deerlodge National Forest

Includes the Alder/Niles and Willow Creek timber sales, West Fork Rock Creek, Black Pine Ridge and the East Fork Reservoir areas.

T08N R15W SECTION 18, SW $\frac{1}{4}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$, SE $\frac{1}{4}$ SE $\frac{1}{4}$
 T08N R15W SECTION 19, NE $\frac{1}{4}$ NE $\frac{1}{4}$
 T08N R16W SECTION 13, NE $\frac{1}{4}$ NE $\frac{1}{4}$, NW $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$
 T08N R16W SECTION 24, NE $\frac{1}{4}$, NW $\frac{1}{4}$ SE $\frac{1}{4}$
 T08N R15W SECTION 1, NW $\frac{1}{4}$ NE $\frac{1}{4}$
 T08N R15W SECTION 25, NE $\frac{1}{4}$ SE $\frac{1}{4}$, NW $\frac{1}{4}$ SW $\frac{1}{4}$
 T05N R17W SECTION 8, SW $\frac{1}{4}$
 T05N R17W SECTION 7, NE $\frac{1}{4}$ SE $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$
 T05N R17W SECTION 35, SE $\frac{1}{4}$ NE $\frac{1}{4}$

 T04N R14W SECTION 17, NW $\frac{1}{4}$ NE $\frac{1}{4}$
 T04N R14W SECTION 8, SW $\frac{1}{4}$ SE $\frac{1}{4}$

E. HABITAT

1. **DESCRIPTION:** In Montana, Allotropa virgata populations occur most often in Abies lasiocarpa/Xerophyllum tenax or Abies lasiocarpa/Vaccinium scoparium habitat types. The dominant canopy tree is usually Pinus contorta with Pseudotsuga menziesii often co-dominant; Tree cover is commonly 40-50%. The cover of Abies lasiocarpa is usually low and plants are often at the sapling or seedling stage. Stand age is 120-330 years with an average of about 200 years. Understory vegetation cover at these sites is generally sparse with shrub cover typically 30% and herbaceous cover 10-15%. Populations generally occur on moderate slopes of 15-25% and on all aspects, although southerly aspects are most common. Many sites have been lightly burned as evidenced by fire scars on canopy trees.
2. **ASSOCIATED SPECIES:** The following plant species are commonly associated with Allotropa virgata:

Abies lasiocarpa (subalpine fir)
Pinus albicaulis (whitebark pine)
Pinus contorta (lodgepole pine)
Pseudotsuga menziesii (Douglas fir)
Amelanchier alnifolia (western serviceberry)
Arctostaphylos uva-ursi (kinnikinnick)
Arenaria macrophylla (bigleaf sandwort)
Arenaria rubella (reddish sandwort)
Arnica cordifolia (heart-leaf arnica)

Arnica latifolia (broadleaf arnica)
Calamagrostis rubescens (pinegrass)
Calamagrostis tweedyi (Cascade reedgrass)
Carex concinna (low northern sedge)
Carex concinnoides (northwestern sedge)
Carex geyeri (elk sedge)
Chimaphila umbellata (common prince's pine)
Chimaphila menziesii (little prince's pine)
Epilobium angustifolium (fireweed)
Festuca idahoensis (Idaho fescue)
Fragaria virginiana (common strawberry)
Goodyera oblongifolia (western rattlesnake-plantain)
Hedysarum occidentale (western hedysarum)
Hieracium albiflorum (white-flowered hawkweed)
Hypopitys monotropa (fringed pinesap)
Lonicera utahensis (Utah honeysuckle)
Menziesia ferruginea (false huckleberry)
Pedicularis contorta (coiled-beak lousewort)
Pedicularis racemosa (sickletop lousewort)
Phlox longifolia (long-leaved phlox)
Pterospora andromedea (woodland pinedrops)
Pyrola asarifolia (pink wintergreen)
Pyrola picta (white-vein pyrola)
Ribes americanum (black currant)
Salix scouleriana (Scouler willow)
Sedum lanceolatum (lance-leaved stonecrop)
Spiraea betulifolia (shiny-leaf spiraea)
Vaccinium globulare (globe huckleberry)
Vaccinium membranaceum (big huckleberry)
Vaccinium scoparium (whortleberry)
Viola orbiculata (round-leaved violet)
Xerophyllum tenax (beargrass)

3. **SOIL RELATIONSHIPS:** The sites are all on soils derived from the granitic parent materials of the Idaho batholith. These soils are probably acidic but no analyses have been done.

F. POPULATION DEMOGRAPHY AND BIOLOGY

1. **PHENOLOGY:** Annual, elongated, spike-like stems arise from a perennial root mass in late June or early July and persist, often for more than a year, after the stem has died.
2. **POPULATION SIZE AND CONDITION:** The populations of *Allotropa virgata* are characteristically small with most being fewer than 100 ramets. Many locations consist of fewer than 5 plants. Occasionally, populations have several hundred ramets. These small populations are often scattered across the landscape in large areas of seemingly suitable habitat. This

suggests that the habitat requirements of the species are quite specific and may relate to the occurrence of a suitable mycobiont.

3. REPRODUCTIVE BIOLOGY

- a. **TYPE OF REPRODUCTION:** Sexual.
- b. **POLLINATION BIOLOGY:** Nectar accumulates by adhesion in the small spaces bounded by the ovary and the sepals. Bumblebees are the primary known pollinators, Psithyrus insularis and Bombus mixtus. Often there is more than one floral axis per root mass and more than several flowers per axis which constitutes a significant reward for pollinators (Wallace 1977).

G. POPULATION ECOLOGY

1. BIOLOGICAL INTERACTIONS

- a. **EPIPARASITISM:** Allotropa virgata indirectly parasitizes pines and perhaps Douglas-fir via connecting mycelia of mycorrhizal fungi. This epiparasitism is relatively common in the plant kingdom, occurring in at least 7 families, 51 genera, and approximately 400 species (Furman and Trappe 1971). Studies of Monotropa and Hypopitys show that they are unable to survive without a fungal associate (Furman and Trappe 1971). They are best regarded as highly specialized and are the most dependent component of an anatomically-linked system of interacting plants. Materials move from the green component to the achlorophyllous component and vice versa (Furman and Trappe 1971). This is likely true for A. virgata as well.
- a. **COMPETITION:** In Montana, A. virgata does not occur often in areas with a high percentage of understory cover. It obviously does not compete for light but may be affected by competition for water or soil nutrients, although it derives much of these from the photosynthetic tree and mycorrhizal fungus.
- b. **HERBIVORY:** Grazing of A. virgata stalks by large ungulates has been observed.

H. LAND OWNERSHIP**Beaverhead National Forest****Wisdom Ranger District**

Elk Creek (020)
Rat Creek (021)
Hogans Guard Station (022)
Prairie Creek (023)

Deerlodge National Forest**Philipsburg Ranger District**

Angelico Creek (001)
Meyers Creek (002)
Sandstone Ridge (017)

Bitterroot National Forest**Darby Ranger District**

Upper Lick Creek (004)
Yellowstone Camp (008)
Sleeping Child Creek (013, 014, 015, 016)

Stevensville Ranger District

St. Mary Peak (005)
Smith Creek (010)
Gash Point (011)
Saint Mary Peak (024)
Glen Lake Trail (025)
Bear Creek Overlook (027)

Sula Ranger District

Buck Creek (012)
Tolan Creek (018, 026)

West Fork Ranger District

Razorback Mountain (003)
Nelson Creek Ridge (006)
Boulder Point (007)
Rombo Creek (019)

Lolo National Forest

Missoula Ranger District**Williams Gulch (Bagdad) (009)****III. ASSESSMENT AND MANAGEMENT RECOMMENDATIONS****A. THREATS TO CURRENTLY KNOWN POPULATIONS:**

1. **GRAZING:** The sites occupied by Allotropa virgata contain very small amounts of forage and thus it is unlikely that grazing would have much effect on this species. Casual observation suggests that some

Allotropa virgata plants may have been browsed by ungulates but the significance of this is unclear.

2. **TIMBER HARVESTING:** Several of the current locations of Allotropa virgata are within proposed timber sales. Since Allotropa virgata is dependent, through an intervening fungus, on the continued existence of living canopy trees, timber harvest is a serious threat to the plant.

- B. **MANAGEMENT PRACTICES AND RESPONSE:** Removal of trees, either by harvesting or stand-replacing fire, upon which Allotropa virgata is dependent would likely result in a loss of populations, since other mycotrophic species have been observed to recede from the edges of logged or burned areas (Castellano 1990). Allotropa virgata would likely survive less severe fires that leave the canopy trees essentially intact because it has a deep-seated rootstock.

- C. **RECOMMENDATIONS FOR MAINTAINING VIABLE POPULATIONS:** The following recommendations are made to ensure that the long-term viability of Allotropa virgata populations is maintained on U.S. Forest Service land in Montana.

1. Protection of natural habitats that currently support Allotropa virgata populations. Management plans on the Bitterroot and Deerlodge National Forests should take all known populations into consideration and prevent disturbance of the sites.
2. Notification of U.S. Forest Service personnel of sites on U.S. Forest Service lands. To prevent inadvertent impacts on currently known sites, personnel involved in planning activities should be provided with detailed information on the location of Allotropa virgata populations. It is especially important that timber sale managers and engineers at the Ranger District level know of these locations so that disturbance can be prevented.

D. **RECOMMENDATIONS FOR FURTHER ASSESSMENT:**

1. Further field surveys of potential habitats. Surveys in 1991 located additional populations in both Montana (section V) and Idaho (Lichhardt and Mancuso 1991). Additional surveys should be made in portions of the Beaverhead, Bitterroot, and Deerlodge National Forests.
2. Establish and continue monitoring studies to assess population condition and status. Several monitoring

sites were established in 1991. Monitoring of these sites should be continued in 1992 and additional sites should be established.

3. Prepare a species management guide (conservation strategy). The information gathered in the survey and monitoring activities recommended above should be used to prepare a species management guide for Allotropa virgata. The guide should be prepared in cooperation with the Nez Perce National Forest and the Idaho Conservation Data Center and should include the Idaho populations in the strategy. Challenge Cost-Share projects have been proposed by the Montana Natural Heritage Program with the Beaverhead, Bitterroot and Deerlodge National Forests for 1992 to further the above recommendations.

IV. LITERATURE CITED

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V. ELEMENT OCCURRENCE PRINT-OUTS AND MAPS

Element Occurrence Record
Allotropa virgata

14

Occurrence number: 001

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: ANGELICO CREEK
EO rank:
EO rank comments:

County: GRANITE

USGS quadrangle: MAUKEY GULCH

Township: 005N Range: 016W Section: 21 Precision: M
Township-range comments: SE4

Survey date: 1976-08-06 Elevation: 6400
First observation: 1976 Slope/aspect:
Last observation: 1976-08-06 Size (acres): 1

Location:

EAST SLOPE OF SAPPHIRE MOUNTAINS, NORTHEAST OF ANGELICO CREEK, CA. 2.5
AIR MILES SE OF MOUNT EMERINE.

Element occurrence data:

SINGLE PLANT.

General site description:

UNKNOWN.

Land owner/manager:

DEERLODGE NATIONAL FOREST, PHILIPSBURG RANGER DISTRICT

Comments:

SIGHT RECORD. 1991: POPULATION NOT RELOCATED BY CEDRON JONES AND SARA
TOUBMAN.

Information source:

JOY, JOHN. DEERLODGE NATIONAL FOREST, P.O. BOX 400, BUTTE, MT 59703.

Element Occurrence Record
Allotropa virgata

15

Occurrence number: 002

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: MEYERS CREEK
EO rank:
EO rank comments:

County: GRANITE

USGS quadrangle: MOOSE LAKE

Township: 003N Range: 016W Section: 02 Precision: M
Township-range comments: NW4

Survey date: 1976-08-26 Elevation: 6500
First observation: 1976 Slope/aspect:
Last observation: 1976-08-26 Size (acres): 1

Location:

NORTHWEST SLOPE OF ANACONDA-PINTLAR RANGE, NORTHWEST OF MEYERS CREEK,
CA. 1.5 MILES WSW OF MOOSE LAKE.

Element occurrence data:
SINGLE PLANT.

General site description:
UNKNOWN.

Land owner/manager:
DEERLODGE NATIONAL FOREST, PHILIPSBURG RANGER DISTRICT

Comments:

SIGHT RECORD. 1991: POPULATION NOT RELOCATED BY CEDRON JONES AND SARA TOUBMAN.

Information source:
JOY, JOHN. DEERLODGE NATIONAL FOREST, P.O. BOX 400, BUTTE, MT 59703.

Element Occurrence Record
Allotropa virgata

16

Occurrence number: 003

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: RAZORBACK MOUNTAIN
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: PAINTED ROCKS LAKE (15)

Township: 002S Range: 023W Section: 11 Precision: G
Township-range comments:

Survey date: Elevation: 7100
First observation: 1975 Slope/aspect:
Last observation: 1975-07-25 Size (acres):

Location:

COMING OFF RAZORBACK MOUNTAIN INTO BLUE JOINT CREEK; BITTERROOT MOUNTAINS.

Element occurrence data:

UNKNOWN.

General site description:

OPEN WOODS.

Land owner/manager:

BITTERROOT NATIONAL FOREST, WEST FORK RANGER DISTRICT

Comments:

NONE.

Information source:

CORY, J.K. (1535). 1975. SPECIMEN #076337 MONTU.

Element Occurrence Record
Allotropa virgata

17

Occurrence number: 004

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: UPPER LICK CREEK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: COMO PEAKS

Township: 004N Range: 022W Section: 22 Precision: M
Township-range comments: 27

Survey date: Elevation: 7500
First observation: 1976 Slope/aspect:
Last observation: 1976-07-30 Size (acres):

Location:

ABOVE UPPER LICK CREEK, NW OF COMO LAKE; BITTERROOT MOUNTAINS.

Element occurrence data:

UNKNOWN.

General site description:

UNDER PINUS CONTORTA AND OTHER CONIFERS, AT SITE OF VERY OLD
BURNED-OVER AREA.

Land owner/manager:

BITTERROOT NATIONAL FOREST, DARBY RANGER DISTRICT

Comments:

NONE.

Information source:

CORY, J.K. (1643). 1976. SPECIMEN #78044 MONTU.

Element Occurrence Record
Allotropa virgata

18

Occurrence number: 005

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: ST. MARY PEAK
EO rank: B
EO rank comments: EXTENSIVE POPULATION IN GOOD CONDITION,
POPULATION ON SILVERTHORN CREEK
ADJACENT TO AND WITHIN CLEAR-CUTS.

County: RAVALLI

USGS quadrangle: SAINT MARY PEAK
VICTOR

Township: 009N Range: 021W Section: 26 Precision: S
Township-range comments: SW4, SE4NE4, 25NW4, 35NW4NW4

Survey date: 1991-08-28 Elevation: 6900
First observation: 1965 Slope/aspect: 10-40 % / EAST, SOUTH
Last observation: 1991-08-28 Size (acres): 60

Location:

2 MILES SE OF ST. MARY PEAK (BITTERROOT RANGE), ON SLOPES NORTH OF THE OUTHOUSE, AND ON BOTH SIDES OF THE TRAIL FOR CA. THE FIRST 0.5 MILE. ALSO JUST NORTH OF ROAD AFTER IT PASSES OVER SILVERTHORN CREEK.

Element occurrence data:

1991: CA. 88 STEMS IN ST. MARY PEAK SUBPOPULATION, AND 23 PLANTS IN SILVERTHORN CREEK SUBPOPULATIONS. 1965: ONE PLANT IN FLOWER.

General site description:

ABIES LASIOCARPA HABITAT TYPE. OLD (175 YEARS) PINUS CONTORTA DOMINATED FOREST WITH: PSEUDOTSUGA MENZIESII (OLD), ABIES LASIOCARPA (SEEDLINGS AND SAPLING AGED), MENZIESIA FERRUGINEA, VACCINIUM SCOPARIUM, XEROPHYLLUM TENAX, HEDYSARUM OCCIDENTALE AND GOODYERA OBLONGIFOLIA.

Land owner/manager:

BITTERROOT NATIONAL FOREST, STEVENSVILLE RANGER DISTRICT

Comments:

VERY FEW ALLOTROPA VIRGATA PLANTS PER ACRE. VOUCHER - STICKNEY, P. F. (100B), 1965, (MRC).

Information source:

ROE, LISA S. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVE., HELENA, MT 59620. (485, 486). 1991. MONT.

Element Occurrence Record
Allotropa virgata

19

Occurrence number: 006

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: NELSON CREEK RIDGE
EO rank: B
EO rank comments: POPULATION IS NOT LARGE.

County: RAVALLI

USGS quadrangle: BOULDER PEAK

Township: 001N Range: 022W Section: 21 Precision: S
Township-range comments: SW4

Survey date:	1991-08-31	Elevation:	7680
First observation:	1975	Slope/aspect:	25-30 % / ESE
Last observation:	1991-08-31	Size (acres):	3

Location:

BITTERROOT MOUNTAINS, NELSON CREEK RIDGE, 4 MILES WEST OF WEST FORK RANGER STATION.

Element occurrence data:

1991: 25 STEMS IN 5 CLUMPS. 1975: ONE PLANT, IN FRUIT.

General site description:

LODGEPOLE PINE FOREST ON SOUTH-FACING SLOPE, ABLA/XETE HABITAT TYPE, WITH PINUS CONTORTA, PSEUDOTSUGA MENZIESII, MENZIESIA FERRUGINEA, VACCINIUM SCOPARIUM, SPIRAEA BETULIFOLIA, XEROPHYLLUM TENAX, PEDICULARIS CONTORTA, HIERACIUM ALBIFLORUM AND CHIMAPHILA UMBELLATA. ABIES LASIOCARPA SEEDLINGS AND SAPLINGS.

Land owner/manager:

BITTERROOT NATIONAL FOREST, WEST FORK RANGER DISTRICT

Comments:

STEVE ARNO'S ORIGINAL LOCATION WAS GIVEN AS 7000 FEET. PLANTS WERE NOT LOCATED AT THIS ELEVATION; SITE WAS PROBABLY HIGHER. VOUCHER - ARNO, S.F. (1324), 1975, (MRC).

Information source:

ROE, LISA S. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVE., HELENA, MT 59620. (487). 1991. MONT.

Element Occurrence Record
Allotropa virgata

20

Occurrence number: 007

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: BOULDER POINT
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: BOULDER PEAK

Township: 001N Range: 022W Section: 14 Precision: M
Township-range comments:

Survey date: Elevation: 7000
First observation: 1975 Slope/aspect:
Last observation: 1975-09-11 Size (acres):

Location:
BITTERROOT MOUNTAINS, BOULDER POINT.

Element occurrence data:
3 PLANTS; IN FRUIT.

General site description:
LODGEPOLE PINE FOREST ON SOUTH-FACING SLOPE.

Land owner/manager:
BITTERROOT NATIONAL FOREST, WEST FORK RANGER DISTRICT

Comments:
POPULATION WAS NOT RELOCATED DURING SURVEY WORK IN 1991. (LISA S.
ROE).

Information source:
ARNO, S. (1327). 1975. MRC.

Element Occurrence Record
Allotropa virgata

21

Occurrence number: 008

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: YELLOWSTONE CAMP
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: GIRD POINT
BALD TOP MOUNTAIN

Township: 004N Range: 019W Section: 03 Precision: S
Township-range comments: SE4, 2SW4, 11NW4NW4, 10NE4NE4.

Survey date:	Elevation: 6680
First observation: 1980	Slope/aspect: 20-50% /
WNW, SOUTH, WEST	
Last observation: 1991-12-27	Size (acres): 100

Location:

SAPPHIRE MOUNTAINS, CA. 10 MILES SOUTHEAST OF HAMILTON. TAKE SLEEPING CHILD ROAD TO FS RD #720, THEN TRAVEL NORTHEAST CA. 7 MILES. SITE IS ON EITHER SIDE OF ROAD.

Element occurrence data:

1991: 405 CLUSTERS WITH 1469 DEAD STEMS AND 765 CURRENT YEAR STEMS (PAST FRUITING). 1980: IN FLOWER.

General site description:

ABIES LASIOCARPA/XEROPHYLLUM TENAX/VACCINIUM SCOPARIUM HABITAT TYPE; WITH PINUS CONTORTA (DOMINANT TREE COVER), VACCINIUM GLOBULARE, HIERACIUM ALBIFLORUM, PYROLA PICTA, MENZIESIA FERRUGINEA, SPIRAEA BETULIFOLIA AND CAREX spp. 50% TREE COVER, 60% SHRUB COVER, 20% EACH FORB AND MOSS/LICHEN COVER.

Land owner/manager:

BITTERROOT NATIONAL FOREST, DARBY RANGER DISTRICT

Comments:

1991 SURVEY BY LINDA PIETARINEN AND ROBIN MATTHEWS, BITTERROOT NATIONAL FOREST. VOUCHER- ARNO, S. (1361), 1980, MRC.

Information source:

SENSITIVE PLANT COORDINATOR, BITTERROOT NATIONAL FOREST, 316 NORTH THIRD STREET, HAMILTON, MT 59840.

Element Occurrence Record
Allotropa virgata

22

Occurrence number: 009

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: WILLIAMS GULCH (BAGDAD)
EO rank: B
EO rank comments: SERAL STAND, BUT NO EVIDENCE OF PAST
LOGGING, GRAZING, ETC.

County: GRANITE

USGS quadrangle: STONY CREEK

Township: 007N Range: 017W Section: 14 Precision: S
Township-range comments: NE4NE4

Survey date:	Elevation: 6300
First observation: 1989	Slope/aspect: 7% / EAST
Last observation: 1989-07-12	Size (acres): 1

Location:

SAPPHIRE MOUNTAINS; CA. 18 AIR MILES WEST OF PHILIPSBURG, ALONG RIDGE
ABOVE WILLIAMS GULCH.

Element occurrence data:

TWO FLOWERING STEMS NEXT TO EACH OTHER, AND TWO DRIED STEMS FROM LAST
YEAR.

General site description:

SHOULDER OF HILL; PINUS CONTORTA STAND IN ABIES LASIOCARPA HABITAT
TYPE, WITH VACCINIUM SCOPARIUM, HYPOPITYS MONOTROPA, CALAMAGROSTIS
RUBESCENS, SPIRAEA BETULIFOLIA, HEDYSARUM OCCIDENTALE.

Land owner/manager:

LOLO NATIONAL FOREST, MISSOULA RANGER DISTRICT

Comments:

VOUCHER - KRATZ, A. (89071201), 1989, MRC.

Information source:

KRATZ, A. LOLO NATIONAL FOREST, BUILDING 24, FORT MISSOULA, MISSOULA,
MT 59801.

Element Occurrence Record
Allotropa virgata

23

Occurrence number: 010

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: SMITH CREEK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: VICTOR

Township: 008N Range: 021W Section: 17 Precision: S
Township-range comments: N2SE4

Survey date:	Elevation: 6700
First observation: 1988	Slope/aspect: 40%/EAST
Last observation: 1988-08-08	Size (acres): 0

Location:

CA. 5 MILES NORTHWEST OF VICTOR, NORTH OF SMITH CREEK.

Element occurrence data:

TWO STEMS AND PERHAPS MORE (1988).

General site description:

GROWING UNDER AN OLD, VERY LARGE DOUGLAS FIR. SUBALPINE
FIR/BEARGRASS-HUCKLEBERRY HABITAT TYPE. IDAHO BATHOLITH GRANITE. SOIL:
TYPIC CRYORTHENTS, SANDY-SKELETAL, MIXED WITH AN ACID LOAM SURFACE,
WELL DRAINED.

Land owner/manager:

BITTERROOT NATIONAL FOREST, STEVENSVILLE RANGER DISTRICT

Comments:

MAP MARKS EXACT LOCATION, LABEL DESCRIPTION INCLUDES 3 QUARTER
SECTIONS.

Information source:

MCBRIDE, KEN, BITTERROOT N.F., 316 NORTH 3RD STREET, HAMILTON, MT
59840. (S.N.). 1988. MRC.

Element Occurrence Record
Allotropa virgata

24

Occurrence number: 011

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: GASH POINT
EO rank: B
EO rank comments: 1991: REMOTE LOCATION, SECOND
SUBPOPULATION LARGER. 1990: SINGLE PLANT
LOCATED ALONG TRAIL; MAY BE DISTURBED.

County: RAVALLI

USGS quadrangle: GASH POINT

Township: 008N Range: 021W Section: 30 Precision: S
Township-range comments: NE4SE4;T8NR22W,25NE4SE4

Survey date:	1991-08-29	Elevation:	6280
First observation:	1990	Slope/aspect:	40-50 % / SOUTHWEST
Last observation:	1991-08-29	Size (acres):	1

Location:

TAKE GASH CREEK ROAD # 737 TO ROAD # 13101. FOLLOW THIS TO LAST SWITCHBACK BEFORE ROAD ENDS; TRAIL BEGINS HERE. FOLLOW TRAIL FOR CA. 0.75 MILE; PLANT IS LOCATED AT TOP OF LAST SWITCHBACK. OTHER SUBPOPULATION IS LOCATED ON RIDGE TO THE SOUTH.

Element occurrence data:

1991: TWO SUBPOPULATIONS; 42 STEMS AT SOUTH SITE, 3 STEMS AT NORTH SITE. 1990: GROWTH WAS SHORT, CONSISTING ONLY OF FLOWERING STEM.
SINGLE PLANT OBSERVED.

General site description:

ABILAS/XERTEN/VACSCO HABITAT TYPE, WITH VACCINIUM GLOBULARE, PENSTEMON SP.

Land owner/manager:

SELWAY-BITTERROOT WILDERNESS AREA
BITTERROOT NATIONAL FOREST, STEVENSVILLE RANGER DISTRICT

Comments:

LOW-USE TRAIL.

Information source:

ROE, LISA S. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVE., HELENA, MT 59620.

Element Occurrence Record
Allotropa virgata

25

Occurrence number: 012

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: BUCK CREEK
EO rank: C
EO rank comments: SINGLE PLANT, OCCURRING BESIDE TRAIL.

County: RAVALLI

USGS quadrangle: LICK CREEK

Township: 002N Range: 016W Section: 30 Precision: S
Township-range comments: NE4NE4

Survey date: 1990-09-05 Elevation: 6020
First observation: 1990 Slope/aspect: 15-35% / WEST
Last observation: 1990-09-05 Size (acres):

Location:

AT SULA, TAKE EAST FORK BITTERROOT RIVER TURNOFF PAST SULA TO END OF ROAD. TAKE EAST FORK TRAILHEAD ENTRANCE TO THE ANACONDA-PINTLAR WILDERNESS. FOLLOW MAIN TRAIL EAST 4 MILES TO LARGE CAMPSITE. GO UP BUCK CREEK TRAIL CA. 0.5-0.75 MILE TO FORESTED KNOB.

Element occurrence data:

ONE PLANT FOUND, CA. 8" TALL, IN FRUIT.

General site description:

TOP OF KNOB ON A DRY, WEST-FACING SLOPE. AREA MAY HAVE BEEN BURNED. PINUS CONTORTA IS DOMINANT OVERSTORY SPECIES, WITH PICEA ENGELMANNII AND ABIES LASIOCARPA. VACCINIUM GLOBULARE IS DOMINANT UNDERSTORY.

Land owner/manager:

ANACONDA-PINTLAR WILDERNESS AREA
BITTERROOT NATIONAL FOREST, SULA RANGER DISTRICT

Comments:

NONE.

Information source:

MCBRIDE, KEN. SENSITIVE PLANT PROGRAM COORDINATOR, BITTERROOT NATIONAL FOREST, 316 NORTH THIRD ST., HAMILTON, MT 59840.

Element Occurrence Record
Allotropa virgata

26

Occurrence number: 013

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: SLEEPING CHILD CREEK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: BALD TOP MOUNTAIN

Township: 003N Range: 019W Section: 12 Precision: S
Township-range comments: E2SW4

Survey date:	1990-08-23	Elevation:	6720
First observation:	1990	Slope/aspect:	5-25% / S, SW, W, NW
Last observation:	1990-08-23	Size (acres):	20

Location:

CA. 13 AIR MILES EAST OF DARBY. FROM RYE CREEK (SOUTHWEST OF DARBY) TAKE F.S. ROAD #715 TO DIVIDE BETWEEN RYE CREEK DRAINAGE AND SLEEPING CHILD CREEK DRAINAGE. ROAD #715 THEN FOLLOWS NEAR RIDGE TO SOUTHEAST. GO CA. 2-2.5 MILES SOUTHEAST.

Element occurrence data:

69 CLUSTERS: 145 LIVE STEMS, 225 DEAD STEMS. MOSTLY SETTING FRUIT, A FEW FLOWERING, SOME PAST SEED DISPERSAL.

General site description:

ABIES LASIOCARPA AND PINUS CONTORTA OVER OPEN VACCINIUM SCOPARIUM UNDERSTORY. ASSOCIATED SPECIES: VACCINIUM GLOBULARE, XEROPHYLLUM TENAX, PEDICULARIS CONTORTA, SPIRAEA BETULIFOLIA, CAREX CONCINNA, MENZIESIA FERRUGINEA, AND HEAVY LICHEN GROUND COVER.

Land owner/manager:

BITTERROOT NATIONAL FOREST, DARBY RANGER DISTRICT

Comments:

NONE.

Information source:

SHELLY, STEVE. USFS/TNC (RAWE) P.O. BOX 7669, MISSOULA, MT 59807.
(1626). 1990.

Element Occurrence Record
Allotropa virgata

27

Occurrence number: 014

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: SLEEPING CHILD CREEK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: BALD TOP MOUNTAIN

Township: 004N Range: 019W Section: 33 Precision: S
Township-range comments: SW4SE4, SE4SW4, SW4SW4; T3NR19W S4, NW4NE4

Survey date:	1991-09-04	Elevation:	6200
First observation:	1990	Slope/aspect:	15-30% / W, SE
Last observation:	1991-09-04	Size (acres):	18

Location:

SAPPHIRE MOUNTAINS; CA. 11 AIR MILES NORTHEAST OF DARBY. SLEEPING CHILD CREEK DRAINAGE, SLOPES ABOVE (WEST OF) F.S. ROAD #1392, CA. 5 MILES FROM JUNCTION WITH ROAD #273.

Element occurrence data:

1991: MAIN POPULATION, 31 CLUSTERS, 146 STEMS (60 LIVE, 86 DEAD); SOME CLUSTERS MAY HAVE BEEN MISSED DURING THIS SURVEY. 1990: 108 CLUSTERS: 183 LIVE STEMS, 327 DEAD IN MAIN POPULATION. SOUTHERN SUBPOPULATION WAS NOT COUNTED, "NUMEROUS". WESTERN SUBPOPULATION HAD 20 CLUSTERS: 42 LIVE STEMS, 68 DEAD STEMS. LATE FLOWERING/FRUUITING.

General site description:

GRANITE BEDROCK, SOILS GRAVELLY TO LOAMY. ABIES LASIOCARPA HABITAT TYPE AND PINUS CONTORTA/XEROPHYLLUM TENAX. ASSOCIATED SPECIES: ARCTOSTAPHYLOS UVA-URSI, CHIMAPHILA MENZIESII, PEDICULARIS CONTORTA, SPIRAEA BETULIFOLIA, HIERACIUM ALBIFLORUM, PTEROSPORA ANDROMEDEA, PSEUDOTSUGA MENZIESII, CALAMAGROSTIS RUBESCENS, VACCINIUM SCOPARIUM, VACCINIUM MEMBRANACEUM, VACCINIUM GLOBULARE, AMELANCHIER ALNIFOLIA, CAREX CONCINNOIDES.

Land owner/manager:

BITTERROOT NATIONAL FOREST, DARBY RANGER DISTRICT

Comments:

FOREST STILL INTACT, BUT NEW ROAD TRAVERSES SITE.

Information source:

ROE, LISA S. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVE., HELENA, MT 59620.

Element Occurrence Record
Allotropa virgata

28

Occurrence number: 015

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: SLEEPING CHILD CREEK

EO rank:

EO rank comments:

County: RAVALLI

USGS quadrangle: BALD TOP MOUNTAIN

Township: 004N Range: 019W Section: 29 Precision: S
Township-range comments: NW4SW4, NW4SE4, SE4NE4

Survey date:	1990-08-16	Elevation:	6000
First observation:	1990	Slope/aspect:	20-30% / N, NW, WNW
Last observation:	1991-09-03	Size (acres):	20

Location:

SAPPHIRE MOUNTAINS; CA. 10 AIR MILES NORTHEAST OF DARBY. FROM BRIDGE OVER SLEEPING CHILD CREEK GO CA. 12 MILES ON F.S. ROAD #273. TURN LEFT ONTO ROAD #1392 AND GO CA. 1 MILE TO 4TH MAJOR RIGHTHAND CURVE AROUND A LATERAL RIDGELINE. SITE IS ABOVE AND BELOW ROAD ON A NORTHWEST EXPOSURE WITH FAIRLY OPEN CANOPY.

Element occurrence data:

1991: MAIN POPULATION ABOVE ROAD; 10 CLUSTERS WITH 43 STEMS (7 LIVE, 36 DEAD), BELOW ROAD 10 CLUSTERS WITH 41 STEMS (5 LIVE, 36 DEAD). SEVERAL SITES WERE FLAGGED BUT NO PLANTS WERE LOCATED. 1990: 58+ PLANTS (165 STEMS) IN THE MAIN POPULATION. SUBPOPULATION CA. 0.5 MILE SOUTHWEST HAS 4 PLANTS (6 STEMS). SUBPOPULATION CA. 0.25 MILE EAST HAS 1 PLANT (2 FRESH STEMS, 4 DEAD).

General site description:

ABIES LASIOCARPA HABITAT TYPE AND SERAL STAND OF PINUS CONTORTA. ASSOCIATED SPECIES: PSEUDOTSUGA MENZIESII, PINUS CONTORTA, ABIES LASIOCARPA, MENZIESIA FERRUGINEA, AMELANCHIER ALNIFOLIA, VACCINUM SCOPARIUM, VACCINUM GLOBULARE, ARCTOSTAPHYLOS UVA-URSI, XEROPHYLLUM TENAX, SEDUM LANCEOLATUM, ANTENNARIA RACEMOSA, CAREX CONCINNA, PEDICULARIS CONTORTA, PEDICULARIS RACEMOSA, CALAMAGROSTIS RUBESCENS, CALAMAGROSTIS TWEEDYI, GOODYERA OBLONGIFOLIA, LONICERA UTAHENSIS, CHIMAPHILA UMBELLATA, PYROLA ASARIFOLIA.

Land owner/manager:

BITTERROOT NATIONAL FOREST, DARBY RANGER DISTRICT

Comments:

VOUCHER-KRATZ, ANDREW, (900816001), 1990, MRC AND MONTU. CALAMAGROSTIS TWEEDYI CO-OCCURS ON SITE.

Information source:

ROE, LISA S. MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVE., HELENA, MT 59620.

Element Occurrence Record
Allotropa virgata

29

Occurrence number: 016

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: SLEEPING CHILD CREEK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: BALD TOP MOUNTAIN

Township: 004N Range: 019W Section: 20 Precision: S
Township-range comments: SW4NW4

Survey date:	1990-08-14	Elevation:	6400
First observation:	1990	Slope/aspect:	20-30% / NORTHWEST
Last observation:	1990-08-14	Size (acres):	0

Location:

SAPPHIRE MOUNTAINS; CA. 10 AIR MILES NORTHEAST OF DARBY. FROM BRIDGE OVER SLEEPING CHILD CREEK GO CA. 10 MILES ON F.S. ROAD #273 TO WHERE THE ROAD CROSSES OVER A RIDGELINE. TAKE SIDE ROAD EASTWARD ALONG RIDGE. FOLLOW RIDGE ON FOOT EAST THEN NORTH AND DROP OFF ONTO NORTHWEST-FACING SLOPE.

Element occurrence data:

21 LIVE STEMS (ONE COLLECTED) REPRESENTING 5-6 INDIVIDUALS; 8 OTHER DEAD STEMS REPRESENTING 3 ADDITIONAL PLANTS.

General site description:

ABIES LASIOCARPA HABITAT TYPE AND PINUS CONTORTA OVERSTORY WITH SOME PSEUDOTSUGA MENZIESII. ASSOCIATED SPECIES: MENZIESIA FERRUGINEA, VACCINIUM GLOBULARE, VACCINIUM SCOPARIUM, SPIRAEA BETULIFOLIA, PYROLA ASARIFOLIA, SALIX SCOULERIANA, CAREX GEYERI, HYPOPITYS MONOTROPA, GOODYERA OBLONGIFOLIA, CALAMAGROSTIS TWEEDYI, CHIMAPHILA UMBELLATA, ARCTOSTAPHYLOS UVA-URSI, XEROPHYLLUM TENAX, LUPINUS spp., HIERACIUM spp., ARNICA LATIFOLIA, PEDICULARIS CONTORTA, PEDICULARIS RACEMOSA, VIOLA ORBICULATA.

Land owner/manager:

BITTERROOT NATIONAL FOREST, DARBY RANGER DISTRICT

Comments:

VOUCHERS-KRATZ, ANDREW, (900814002), 1990, MRC AND MONTU.
CALAMAGROSTIS TWEEDYI CO-OCCURS ON SITE (WITHIN ONE METER OF ALLOTROPA VIRGATA).

Information source:

LOSENSKY, JACK. USFS, LOLO NATIONAL FOREST, BLDG 24, FORT MISSOULA, MISSOULA, MT 59801. (406) 329-3819.

Element Occurrence Record
Allotropa virgata

30

Occurrence number: 017

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: SANDSTONE RIDGE
EO rank: B
EO rank comments: ADJACENT AREAS TO BE LOGGED IN
1991-1992.

County: GRANITE

USGS quadrangle: ALDER GULCH

Township: 009N Range: 016W Section: 36 Precision: S
Township-range comments: SE4, 31SW4; T8NR15W: 6NW4

Survey date:	1991-10-09	Elevation:	6640
First observation:	1991	Slope/aspect:	0-30%/E, NE
Last observation:	91-10-09	Size (acres):	45

Location:

FROM PHILIPSBURG, TAKE HWY 348 WEST 11 MILES TO WILLOW CREEK TURN NORTH ON FS RD # 88; AFTER 4 MILES, TAKE A LEFT ON MINERS CREEK RD (FS RD# 5156), THEN RIGHT AFTER 1 MILE ONTO FS RD# 4325. TRAVEL CA. 6 MILES NORTH AND TURN LEFT ON UNMARKED LOGGING RD. SITES ARE CA. 1.5 MILES UP THIS ROAD.

Element occurrence data:

CA. 290 STEMS IN 4 MAIN SUBPOPULATIONS.

General site description:

OLDER LODGEPOLE PINE DOMINATED FORESTS (ABILAS/XERTEN/VACSCO HABITAT TYPE), WITH SPARSE UNDERSTORY. PINUS PONDEROSA (CA. 180 YEARS OLD). ABIES LASIOCARPA (,20 YRS. OLD), PINUS ALBICAULIS, VACCINIUM SCOPARIUM, MENZIESIA FERRUGINEA, XEROPHYLLUM TENAX, CHIMAPHILA UMBELLATA, GOODYERA OBLONGIFOLIA.

Land owner/manager:

DEERLODGE NATIONAL FOREST, PHILIPSBURG RANGER DISTRICT

Comments:

THREE OF THE SUBPOPULATIONS ARE IN TIMBER SALE UNITS, DEERLODGE NATIONAL FOREST HAS BEEN INFORMED.

Information source:

ROE, LISA S. MONTANA NATURAL HERITAGE PROGRAM, 1515 E. SIXTH AVE., HELENA, MT 59601.

Element Occurrence Record
Allotropa virgata

31

Occurrence number: 018

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: TOLAN CREEK
EO rank: C
EO rank comments: SMALL POPULATION; SURROUNDING AREA
PLANNED FOR CLEAR-CUT.

County: RAVALLI

USGS quadrangle: SCHULTZ SADDLE

Township: 001S Range: 018W Section: 4 Precision: S
Township-range comments: NW4

Survey date:	1991-09-04	Elevation:	6400
First observation:	1991	Slope/aspect:	20-30/ NE
Last observation:	91-09-04	Size (acres):	1

Location:

ANACONDA RANGE, TOLAN CREEK. FROM SULA, TRAVEL EAST ON STATE HWY 472 6 MILES, THEN SOUTH ON MINK CREEK (FS RD # 5753) CA. 8.5 MILES, THEN SOUTH ON FS RD #5740 CA. 5 MILES. SITE IS ABOVE ROAD AFTER SWITCHBACK ON NORTHEAST-FACING SLOPE.

Element occurrence data:

14 PLANTS.

General site description:

ABIES LASIOCARPA/XEROPHYLLUM TENAX/VACCINIUM GLOBULARE HABITAT TYPE. PINUS CONTORTA DOMINANT TREE SPECIES (156 YRS. OLD), WITH VACCINIUM GLOBULARE, VACCINIUM SCOPARIUM, CALAMAGROSTIS RUBESCENS, CHIMAPHILA UMBELLATA, XEROPHYLLUM TENAX AND PEDICULARIS CONTORTA.

Land owner/manager:

BITTERROOT NATIONAL FOREST, SULA RANGER DISTRICT

Comments:

ECODATA PLOT 033C91ROE05.

Information source:

ROE, LISA S., MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVE., HELENA, MT 59620.

Element Occurrence Record
Allotropa virgata

32

Occurrence number: 019

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: ROMBO CREEK

EO rank:

EO rank comments:

County: RAVALLI

USGS quadrangle: PIQUETT CREEK
PIQUETT MOUNTAIN

Township: 001S Range: 021W Section: 17 Precision:
Township-range comments: SW4NW4,NW4SW4,18N2NE4,SE4NE4,7S2SE4.

Survey date:	Elevation: 6440
First observation: 1991	Slope/aspect: 30% / NORTHWEST
Last observation: 1991-09-18	Size (acres): 150

Location:

BITTERROOT MOUNTAINS. TAKE THE WEST FORK BITTERROOT RIVER ROAD TO FS RD #5715 (CA. 2 MILES SOUTH OF ROMBO CEMETERY), AND TRAVEL ENE ON THIS ROAD FOR CA. 4 MILES; TURN RIGHT ON FS RD #5715A AND TRAVEL CA. 1.5 MILES. SITE IS ABOVE AND BELOW ROAD.

Element occurrence data:

9/91: 187 CLUSTERS, 770 DEAD STEMS, 461 LIVE STEMS; 8/91: 70% FLOWERING, 30% FRUITING.

General site description:

ABIES LASIOCARPA/XEROPHYLLUM TENAX/VACCINIUM GLOBULARE HABITAT TYPE. PINUS CONTORTA (MAJOR TREE SPECIES), WITH PSEUDOTSUGA MENZIESII, PINUS ALBICAULIS, VACCINIUM SCOPARIUM, CHIMAPHILA UMBELLATA, CAREX GEYERI, ARENARIA MACROPHYLLA, CALAMAGROSTIS RUBESCENS AND SPIRAEA SPP. 50% TREE COVER, 60% SHRUB COVER, 20% FORB COVER, AND 10% MOSS/LICHEN COVER; IN GRANITIC SOILS, IN PARTIAL SHADE.

Land owner/manager:

BITTERROOT NATIONAL FOREST, WEST FORK RANGER DISTRICT

Comments:

SURVEY BY LINDA PIETARINEN AND ROBIN MATTHEWS. VOUCHER-PIETARINEN (014), 1991.

Information source:

SENSITIVE PLANT COORDINATOR, BITTERROOT NATIONAL FOREST, 316 NORTH THIRD STREET, HAMILTON, MT 59840.

Element Occurrence Record
Allotropa virgata

33

Occurrence number: 020

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: ELK CREEK
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: ELK CREEK

Township: 002S Range: 018W Section: 3 Precision: S
Township-range comments: N2,W2,4E2,34S2.

Survey date:	Elevation: 6900
First observation: 1991	Slope/aspect: 34% / SOUTHWEST
Last observation: 1991-06-20	Size (acres): 316

Location:

ANACONDA RANGE. TAKE HWY #43 WEST FROM WISDOM CA. 17 MILES TO TRAIL CREEK ROAD; TURN NORTH AND TRAVEL CA. 1.75 MILES TO ELK CREEK. SITE IS CA. 1 MILE UP ELK CREEK (FS RD #1297), NORTH AND EAST OF ROAD.

Element occurrence data:

1991: 150 LIVE STEMS, 500 DEAD STEMS; 30% FLOWERING, 70% VEGETATIVE; SOME BROWSING.

General site description:

PINUS CONTORTA/VACCINIUM CESPITOSUM HABITAT TYPE; WITH PINUS ALBICAULIS, VACCINIUM SCOPARIUM, CALAMAGROSTIS RUBESCENS, CAREX GEYERI, CAREX CONCINNOIDES, FESTUCA IDAHOENSIS, EPILOBIUM ANGUSTIFOLIUM, FRAGARIA VIRGINIANA, PHLOX LONGIFOLIA AND ARENARIA RUBELLA; 30% TREE COVER, 20% SHRUB COVER, 30% BARE GROUND, AND 10% EACH GRAMINOID AND FORB COVER; IN COLLUVIAL SOILS, AND IN PARTIAL SHADE.

Land owner/manager:

BEAVERHEAD NATIONAL FOREST, WISDOM RANGER DISTRICT

Comments:

ECODATA PLOT #023I91Q006. ADDITIONAL SURVEYORS INCLUDE JEFF JONES, QUINN CARVER, AND DIANE WILLIFORD, BEAVERHEAD NATIONAL FOREST.

Information source:

SHELLY, J. STEPHEN. USFS REGION 1, RAWE, P.O. BOX 7669, MISSOULA, MT 59807.

Element Occurrence Record
Allotropa virgata

34

Occurrence number: 021

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: RAT CREEK
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: ELK CREEK

Township: 001S Range: 018W Section: 29 Precision: S
Township-range comments:
NE4, SE4, NW4NW4, 20SW4SE4, 21SW4, 28W2W2, 33W2W2, 32NE4.

Survey date:	Elevation: 7200
First observation: 1991	Slope/aspect: 15% / SOUTHEAST
Last observation: 1991-06-22	Size (acres): 720

Location:

ANACONDA RANGE. TAKE HWY #43 WEST FROM WISDOM CA. 17 MILES TO TRAIL CREEK ROAD; TURN NORTH FOR 5.8 MILES TO FS RD #1269. FOLLOW THIS ROAD UNTIL IT MEETS FS RD #1210, AND THEN UNTIL IT MEETS FS RD #1268. SITE IS NORTH AND WEST OF ROAD.

Element occurrence data:

1991: CA. 200 LIVE STEMS AND 600 DEAD STEMS.

General site description:

ABIES LASIOCARPA/XEROPHYLLUM TENAX/VACCINIUM SCOPARIUM HABITAT TYPE; WITH PINUS CONTORTA (DOMINANT TREE SPECIE, AGE CA. 190 YEARS), PINUS ALBICAULIS, CALAMAGROSTIS RUBESCENS, SPIRAEA BETULIFOLIA, RIBES AMERICANUM, EPILOBIUM ANGUSTIFOLIUM, AND HIERACIUM ALBIFLORUM; OPEN TO PARTIAL SHADE.

Land owner/manager:

BEAVERHEAD NATIONAL FOREST, WISDOM RANGER DISTRICT

Comments:

SURVEY BY QUINN CARVER, DIANE WILLIFORD AND HEATHER WAGNER. ECODATA PLOT #'S 023I91Q002, 003 AND 004.

Information source:

SENSITIVE PLANT COORDINATOR, BEAVERHEAD NATIONAL FOREST, 610 NORTH MONTANA STREET, DILLON, MT 59725.

Element Occurrence Record
Allotropa virgata

35

Occurrence number: 022

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: HOGANS GUARD STATION
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: LOST TRAIL PASS

Township: 001S Range: 019W Section: 36 Precision: S
Township-range comments: N2,25SW4SE4.

Survey date:	Elevation: 6800
First observation: 1991	Slope/aspect: 20% / EAST
Last observation: 1991-06-23	Size (acres): 23

Location:

FROM WISDOM, TAKE HWY #43 WEST FOR 17.3 MILES TO TRAIL CREEK; GO 5.3 MILES UP TO FS RD #106 TO HOGAN GUARD STATION. FOLLOW ROAD PAST CABIN TO FORK AND TAKE FIRST LEFT. SITE IS CA. 0.25 MILE SSW OF GUARD STATION.

Element occurrence data:

1991: 26 LIVE STEMS, 30 DEAD STEMS; 100% FLOWERING; HEAVILY BROWSED.

General site description:

ABIES LASIOCARPA/XEROPHYLLUM TENAX/VACCINIUM SCOPARIUM HABITAT TYPE; WITH PINUS CONTORTA (DOMINANT TREE SPECIE, CA. 190 YEARS OLD), PINUS ALBICAULIS, PICEA ENGELMANNII, SPIRAEA BETULIFOLIA, CALAMAGROSTIS RUBESCENS, HIERACIUM ALBIFLORUM AND CAREX GEYERI; 30% TREE COVER, 20% SHRUB COVER, 40% BARE GROUND; IN PARTIAL SHADE.

Land owner/manager:

BEAVERHEAD NATIONAL FOREST, WISDOM RANGER DISTRICT

Comments:

SURVEYED BY QUINN CARVER AND DIANE WILLIFORD. ECODATA PLOT #023I91Q001.

Information source:

SENSITIVE PLANT COORDINATOR, BEAVERHEAD NATIONAL FOREST, 610 NORTH MONTANA STREET, DILLON, MT 59725.

Element Occurrence Record
Allotropa virgata

36

Occurrence number: 023

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: PRAIRIE CREEK
EO rank:
EO rank comments:

County: BEAVERHEAD

USGS quadrangle: LOST TRAIL PASS

Township: 001S Range: 019W Section: 13 Precision: S
Township-range comments: SE4

Survey date:	Elevation: 7300
First observation: 1991	Slope/aspect: 16% / SOUTH
Last observation: 1991-06-22	Size (acres): 40

Location:

ANACONDA RANGE, CA. 1.25 MILES EAST OF GIBBONS PASS. FROM WISDOM,
TRAVEL WEST 17.3 MILES ON HWY #43 TO TRAIL CREEK (FS RD #106.3), THEN
TRAVEL NORTHWEST ON THIS ROAD CA. 5 MILES; TURN RIGHT (NNE) ON FS RD
#1269 FOR 1 MILE, THEN TAKE FS RD #7370 TO ITS' END AND HIKE WEST.

Element occurrence data:

1991: 20 LIVE STEMS, 30 DEAD STEMS; 80% FLOWERING AND 20% FRUITING.

General site description:

ABIES LASIOCARPA/XEROPHYLLUM TENAX/VACCINIUM SCOPARIUM HABITAT TYPE;
WITH PINUS CONTORTA (DOMINANT TREE COVER, CA. 270 YEARS OLD), PICEA
ENGELMANNII, PINUS ALBICAULIS, CHIMAPHILA UMBELLATA, CAREX GEYERI,
CAREX CONCINNOIDES AND PYROLA PICTA; 50% TREE COVER, 60% SHRUB COVER,
25% BARE GROUND, 10% FORB COVER, AND A TRACE GRAMINOID COVER.

Land owner/manager:

BEAVERHEAD NATIONAL FOREST, WISDOM RANGER DISTRICT

Comments:

SURVEYED BY QUINN CARVER AND DIANE WILLIFORD. ECODATA PLOT
#023I91Q005.

Information source:

SENSITIVE PLANT COORDINATOR, BEAVERHEAD NATIONAL FOREST, 610 NORTH
MONTANA STREET, DILLON, MT 59725.

Element Occurrence Record
Allotropa virgata

37

Occurrence number: 024

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: SAINT MARY PEAK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: SAINT MARY PEAK

Township: 010N Range: 020W Section: 19 Precision: S
Township-range comments: NW4SW4;T9NR21W:24NE4SE4.

Survey date:	Elevation: 6480
First observation: 1991	Slope/aspect: 30% / SSE
Last observation: 1991-08-22	Size (acres): 40

Location:

BITTERROOT MOUNTAINS. FROM FLORENCE, TAKE HWY 93 SOUTH 4 MILES TO COUNTY ROAD #22. GO WEST CA. 2 MILES, THEN TAKE FS RD #1136; TURN NORTH ON FS RD #62007 FOR CA. 1 MILE, SITE IS ABOVE ROAD.

Element occurrence data:

1991: 8 CLUSTERS, 29 DEAD STEMS, 16 LIVE STEMS; 100% IN FRUIT; SOME PREDATION.

General site description:

ABIES LASIOCARPA/XEROPHYLLUM TENAX/VACCINIUM GLOBULARE HABITAT TYPE; WITH PSEUDOTSUGA MENZIESII (DOMINANT TREE SPECIE), PINUS CONTORTA, PINUS ALBICAULIS, SPIRAEA spp., HEDYSARUM OCCIDENTALE, ARNICA CORDIFOLIA, PEDICULARIS CONTORTA, CALAMAGROSTIS RUBESCENS; 30% TREE AND SHRUB COVER, 10% FORB COVER; IN PARTIAL SHADE.

Land owner/manager:

BITTERROOT NATIONAL FOREST, STEVENSVILLE RANGER DISTRICT

Comments:

SURVEYED BY LINDA PIETARINEN AND ROBIN MATTHEWS, STEVENSVILLE RANGER DISTRICT, ECODATA PLOT #031C91P005.

Information source:

SENSITIVE PLANT COORDINATOR, BITTERROOT NATIONAL FOREST, 316 NORTH THIRD STREET, HAMILTON, MT 59840.

Element Occurrence Record
Allotropa virgata

38

Occurrence number: 025

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: GLEN LAKE TRAIL
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: GASH POINT, MT-ID

Township: 008N Range: 021W Section: 20 Precision: S
Township-range comments: SE4NW4

Survey date:	Elevation: 6720
First observation: 1991	Slope/aspect: 10% / EAST
Last observation: 1991-08-26	Size (acres): 10

Location:

BITTERROOT MOUNTAINS, CA. 5 MILES NNW OF VICTOR. FROM VICTOR, TAKE COUNTY ROAD #42 FOR CA. 3 MILES NORTH AND WEST; TURN RIGHT (NNW) ON FS RD #738 FOR 1.25 MILES, THEN LEFT (SSW) ON FS RD #1321 TO GLEN LAKE TRAIL HEAD. WALK UP TRAIL CA. 0.12 MILE, PLANTS ARE ON BOTH SIDES OF TRAIL.

Element occurrence data:

1991: 30 CLUSTERS, CA. 100 STEMS.

General site description:

ABIES LASIOCARPA/XEROPHYLLUM TENAX HABITAT TYPE; WITH PINUS CONTORTA (DOMINANT TREE SPECIE, 90+ YEARS OLD), PINUS ALBICAULIS, VACCINIUM SCOPARIUM, VACCINIUM GLOBULARE, CAREX GEYERI, PEDICULARIS CONTORTA, HIERACIUM ALBICAULIS, GOODYERA OBLONGIFOLIA, HEDYSARUM OCCIDENTALE; 50% TREE COVER, 40% SHRUB COVER, 20% FORB COVER, TRACE MOSS/LICHEN COVER AND GRAMINOID COVER; IN PARTIAL SHADE.

Land owner/manager:

BITTERROOT NATIONAL FOREST, STEVENSVILLE RANGER DISTRICT

Comments:

SURVEY BY DEDE MONTIGNY, ODEGARD, AND BOYNE, BITTERROOT NATIONAL FOREST. ECODATA PLOT #031C91P007 BY LINDA PIETARINEN, STEVENSVILLE RANGER DISTRICT.

Information source:

SENSITIVE PLANT COORDINATOR, BITTERROOT NATIONAL FOREST, 316 NORTH THIRD STREET, HAMILTON, MT 59840.

Element Occurrence Record
Allotropa virgata

39

Occurrence number: 026

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: TOLAN CREEK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: SCHULTZ SADDLE

Township: 001N Range: 018W Section: 27 Precision: S
Township-range comments: SW4NW4, 28SE4NE4.

Survey date:	Elevation: 6400
First observation: 1991	Slope/aspect: 35% / NNW
Last observation: 1991-08-21	Size (acres): 40

Location:

ANACONDA RANGE, TOLAN CREEK. FROM SULA, TRAVEL 6 MILES EAST ON STATE HWY #472, THEN SOUTH ON MINK CREEK (FS RD #5753) CA. 8.5 MILES, AND FINALLY SOUTH ON FS RD #574 0 CA. 3 MILES. SITE IS ABOVE ROAD.

Element occurrence data:

1991: 27 CLUMPS, 104 DEAD STEMS, 17 LIVE (IN FRUIT). EVIDENCE OF BROWSING.

General site description:

ABIES LASIOCARPA/VACCINIUM SCOPARIUM/CALAMAGROSTIS RUBESCENS HABITAT TYPE; IN PARTIAL SHADE, WITH MATURE PINUS CONTORTA, LONICERA UTAHENESIS, XEROPHYLLUM TENAX AND CHIMAPHILA UMBELLATA; 40% TREE COVER, 70% SHRUB COVER, 10% EACH FORB AND GRASS COVER; GRANITIC PARENT MATERIAL; LOTS OF DOWNFALL PRESENT.

Land owner/manager:

BITTERROOT NATIONAL FOREST, SULA RANGER DISTRICT

Comments:

SURVEYED BY LINDA PIETARINEN AND ROBIN MATTHEWS, BITTERROOT NATIONAL FOREST. ECODATA PLOT #033091P004.

Information source:

SENSITIVE PLANT COORDINATOR, BITTERROOT NATIONAL FOREST, 316 NORTH THIRD STREET, HAMILTON, MT 59840.

Element Occurrence Record
Allotropa virgata

40

Occurrence number: 027

Global rank: G4 Forest Service status: SENSITIVE
State rank: S1 Federal Status:

Survey site name: BEAR CREEK OVERLOOK
EO rank:
EO rank comments:

County: RAVALLI

USGS quadrangle: GASH POINT

Township: 007N Range: 022W Section: 1 Precision: S
Township-range comments: SW4NE4

Survey date: 1991-08-29 Elevation: 6840
First observation: 1991 Slope/aspect: 40% / NORTHEAST
Last observation: 1991-08-29 Size (acres): 1

Location:

FROM VICTOR, TAKE COUNTY ROAD #42 NORTH AND WEST CA. 5 MILES TO FS RD #739. FOLLOW SWITCHBACKS UP FOR CA. 6 MILES TO SILVERTHORN CREEK. SITE IS JUST NORTH OF ROAD END.

Element occurrence data:

CA. 5 PLANTS, EACH WITH 1-6 STEMS.

General site description:

ABIES LASIOCarpa/XEROPHYLLUM TENAX/VACCINIUM GLOBULARE HABITAT TYPE. IN WELL-DRAINED GRANITIC SOILS, ON MODERATELY STEEP SLOPE, BENEATH MATURE ABIES LASIOCarpa, PSEUDOTSUGA MENZIESII, PINUS ALBICAULIS, PICEA ENGELMANNII AND A FEW PINUS CONTORTA TREES. ASSOCIATED SPECIES INCLUDE VACCINIUM SCOPARIUM, VACCINIUM GLOBULARE, XEROPHYLLUM TENAX, CHIMAPHILA UMBELLATA, CHIMAPHILA MENZIESII, SPIRAEA BETULIFOLIA AND GOODYERA OBLONGIFOLIA. 50% TREE COVER, 20-30% SHRUB COVER, 10% FORB COVER, 5% MOSS/LICHEN COVER, AND LESS THAN 5% GRAMINOID AND BARE-GROUND COVER.

Land owner/manager:

BITTERROOT NATIONAL FOREST, STEVENSVILLE RANGER DISTRICT

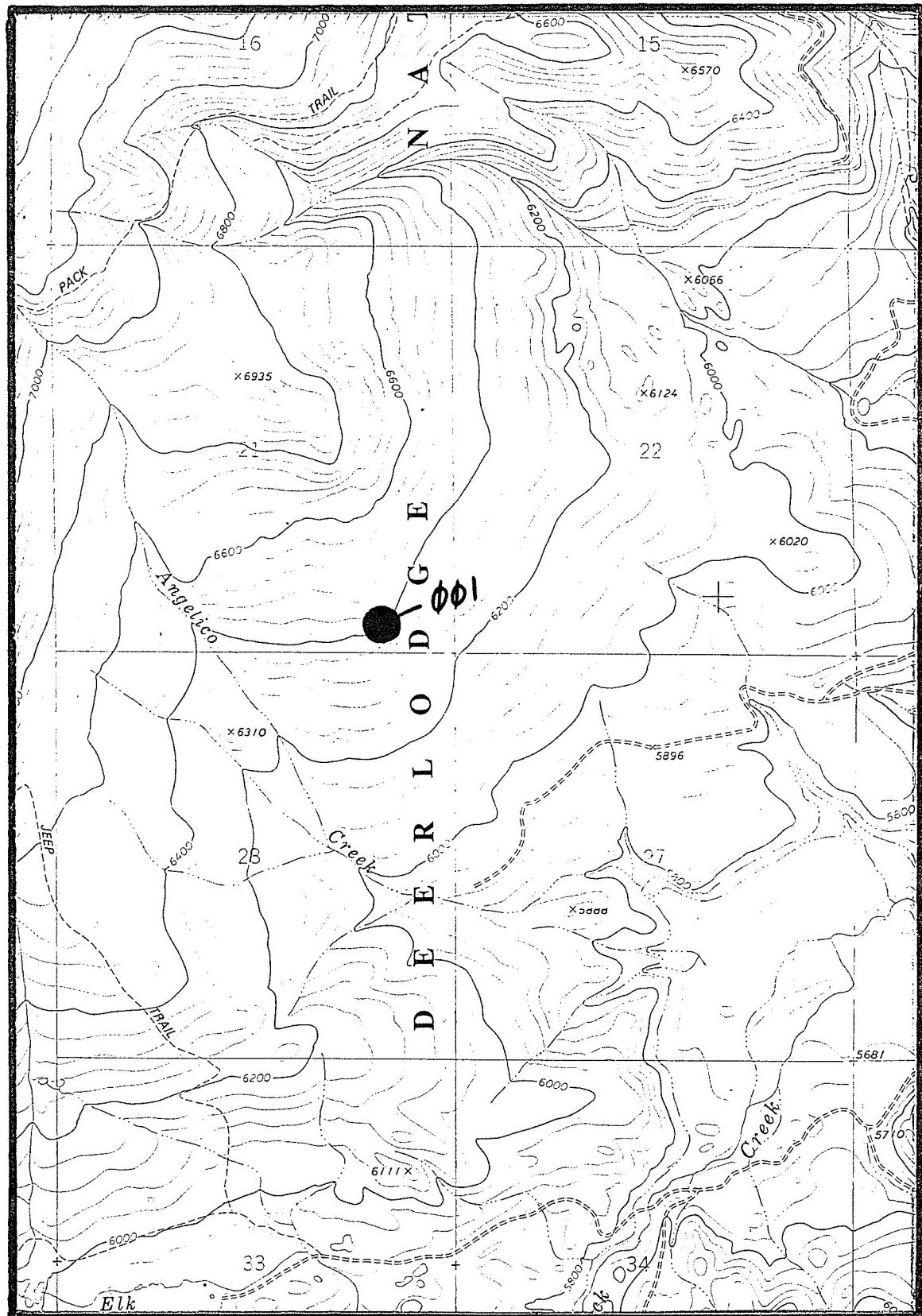
Comments:

ADDITIONAL SURVEYORS INCLUDE MIKE BARTON, JOHN BOYNE AND CRAIG ODEGARD. DETAILED SURVEY NOT COMPLETE.

Information source:

JANET JOHNSON, BITTERROOT NATIONAL FOREST, 316 NORTH THIRD STREET, HAMILTON, MT 59840.

MONTANA

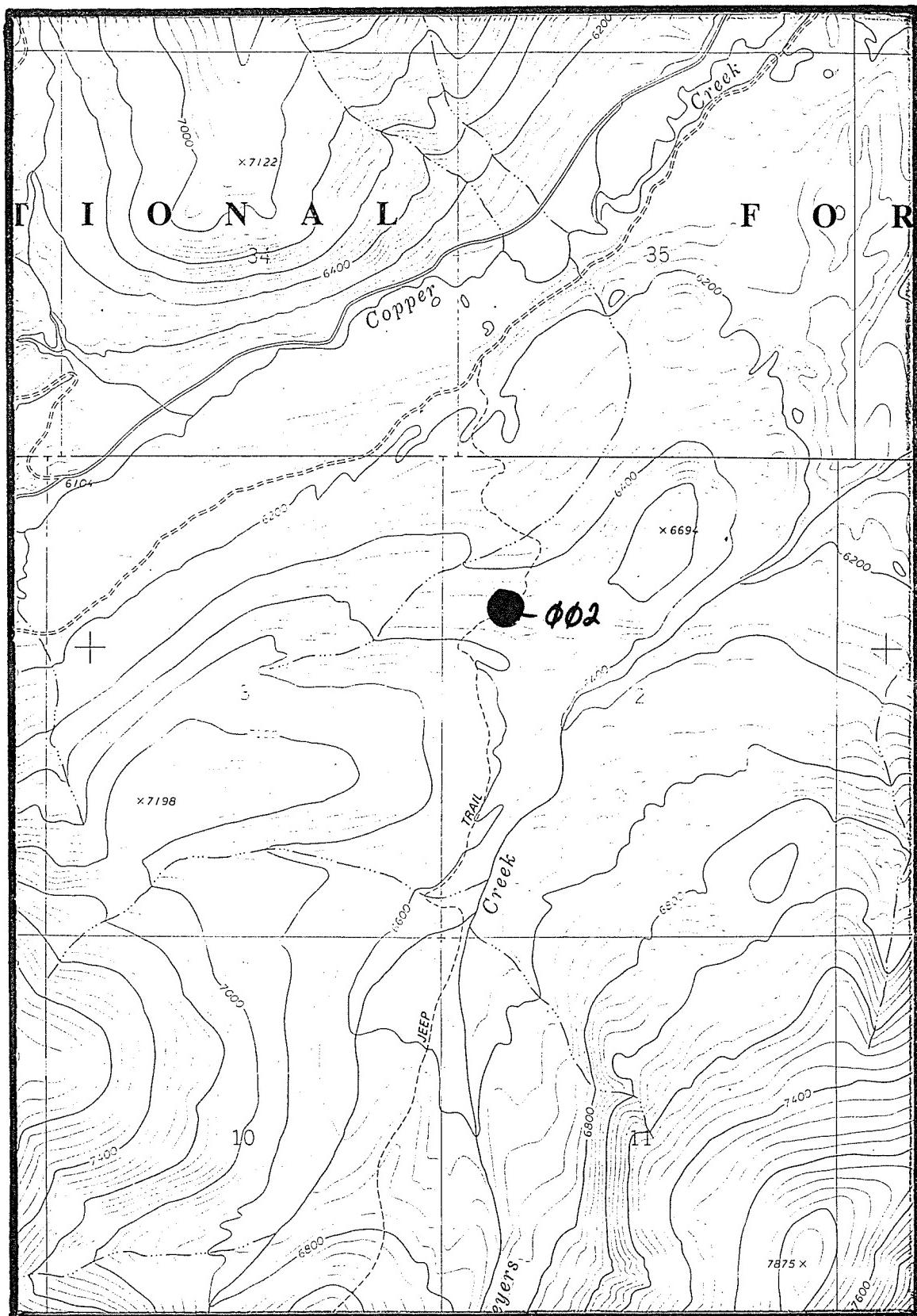


Allotropa virgata

Angelico Creek (001)

USGS Maukey Gulch Quadrangle (7.5')

MONTANA

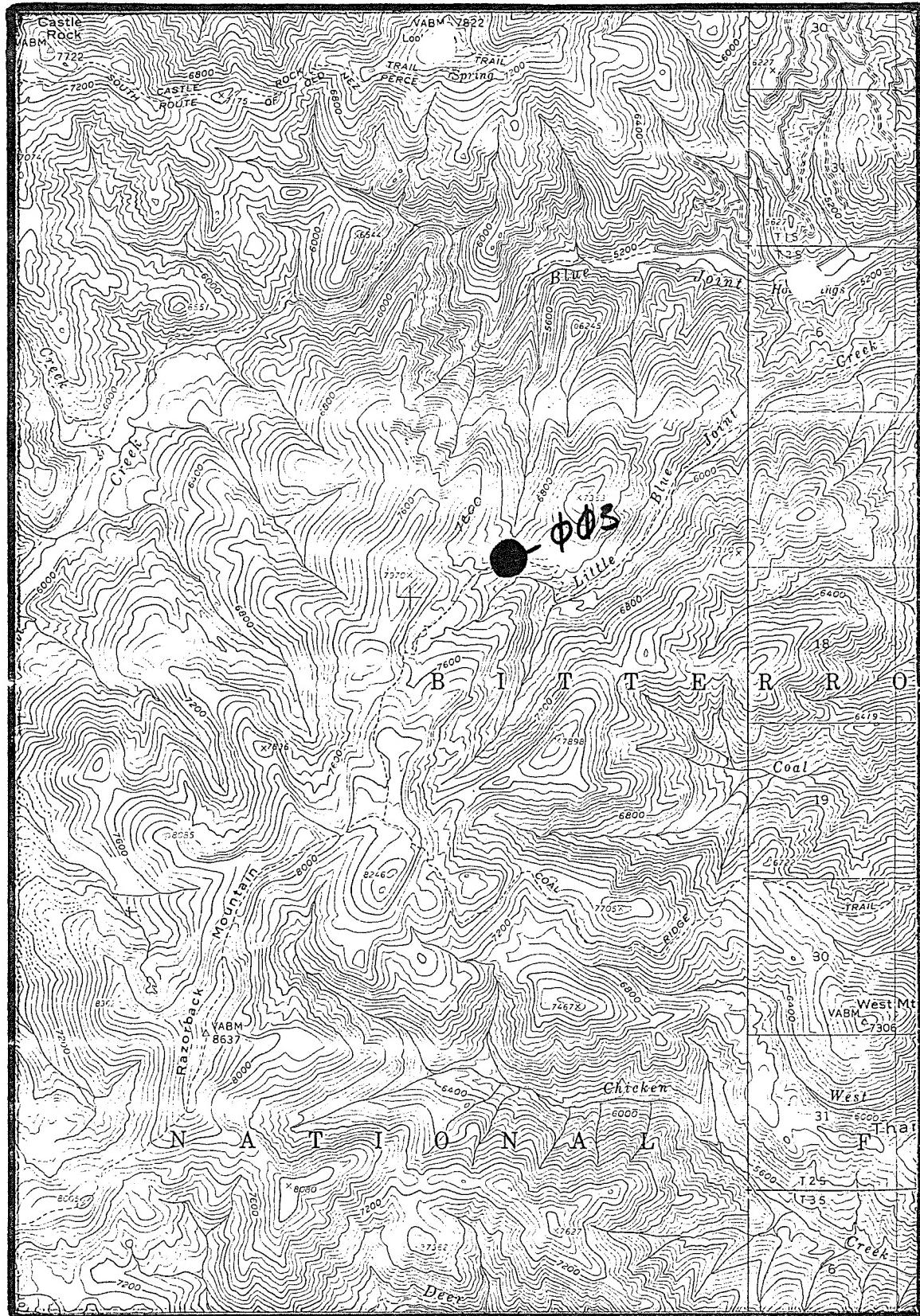


Allotropa virgata

Meyers Creek (002)

USGS Moose Lake Quadrangle (7.5')

MONTANA

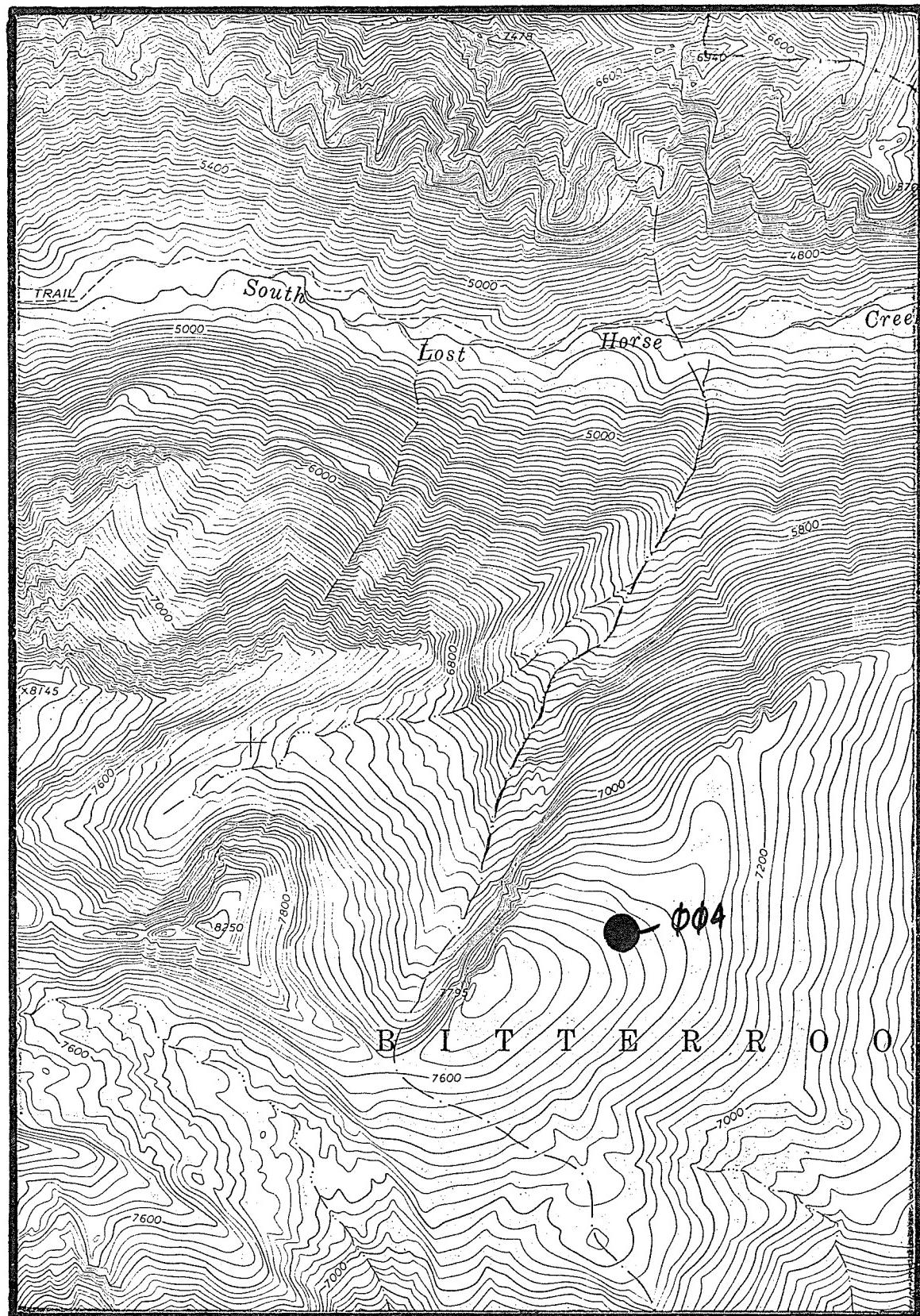


Allotropa virgata

Razorback Mountain (003)

USGS Painted Rocks Lake Quadrangle (15')

MONTANA

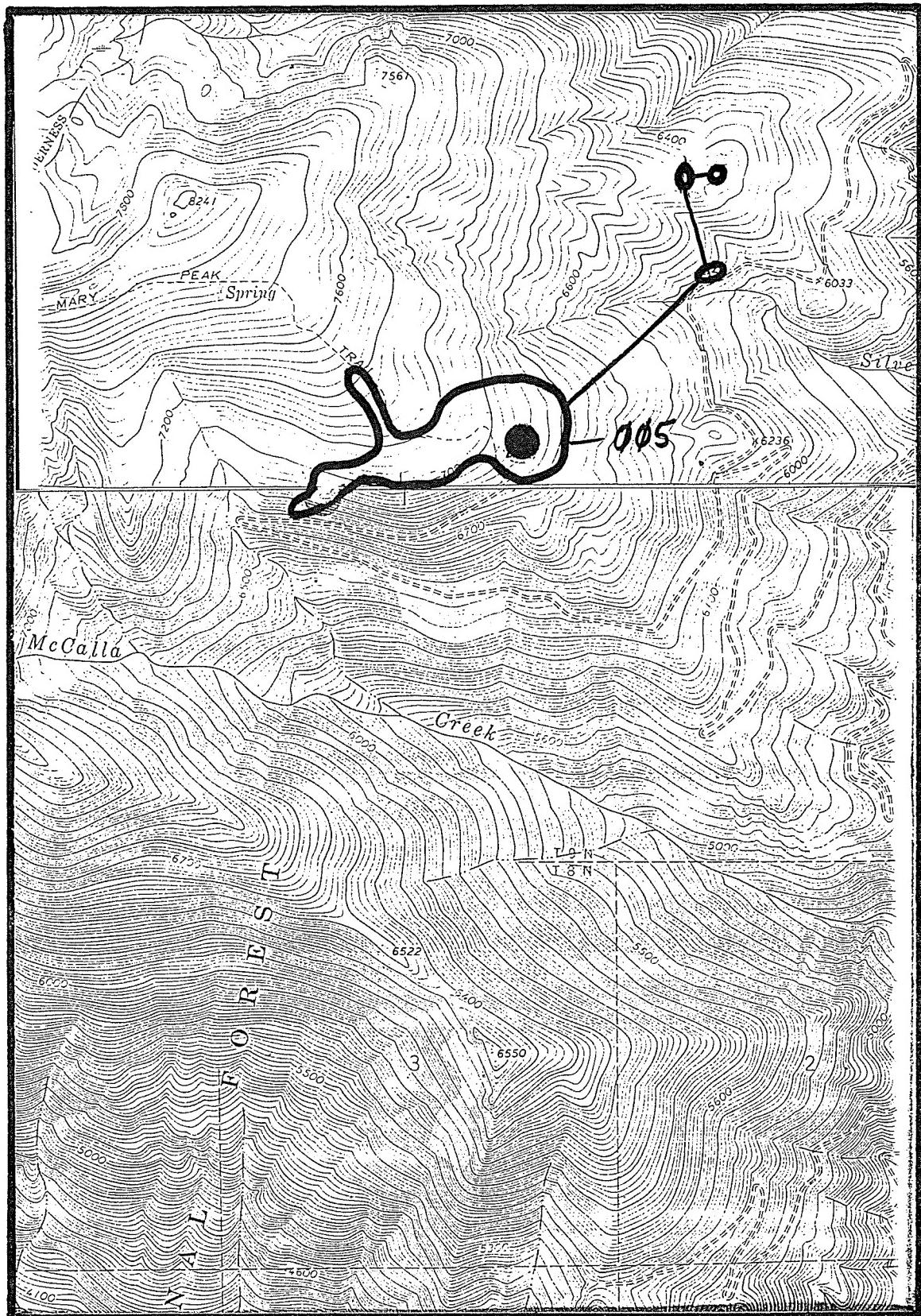


Allotropa virgata

Upper Lick Creek (004)

USGS Como Peaks Quadrangle (7.5')

MONTANA

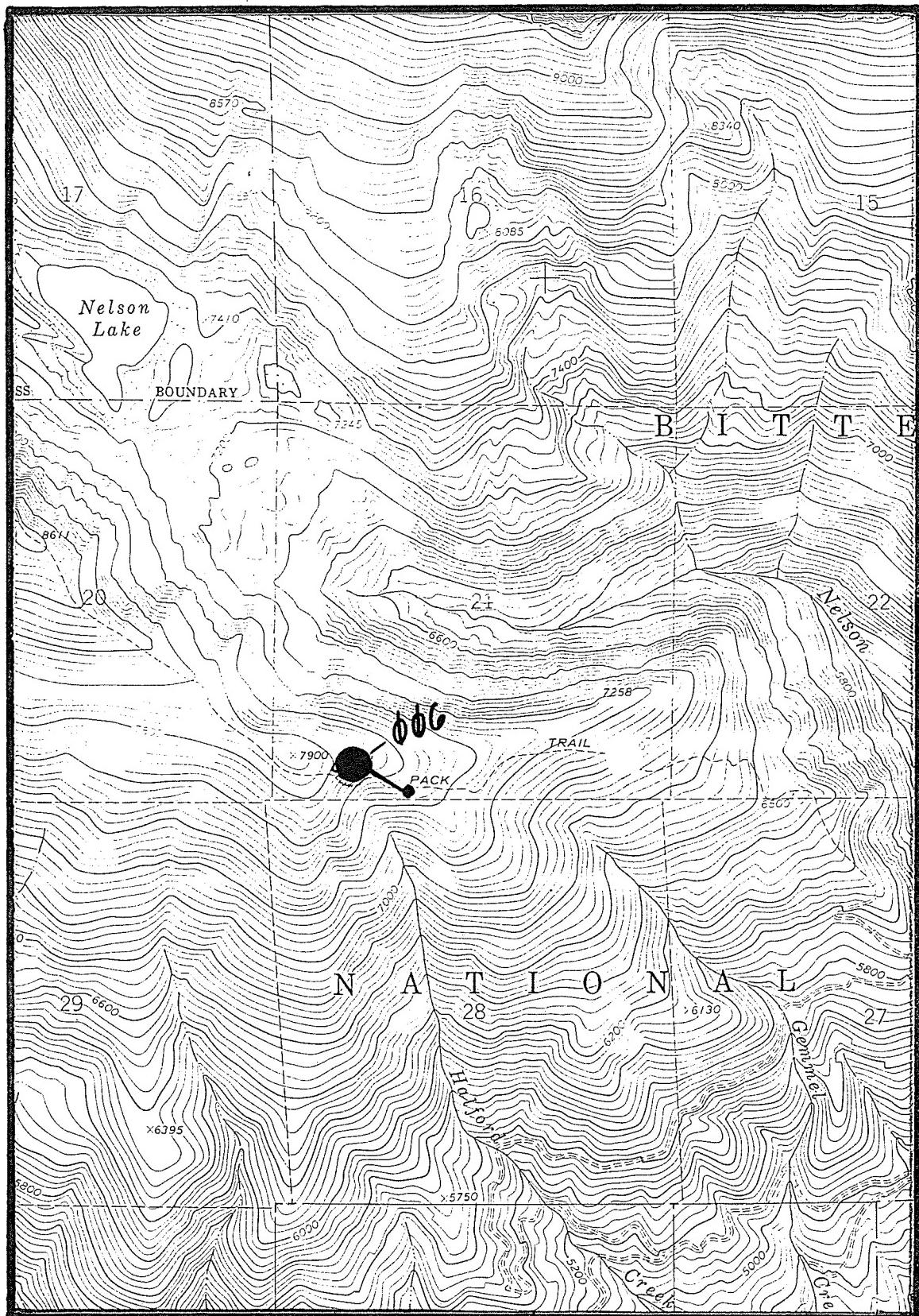


Allotropa virgata

St. Mary Peak (005)

USGS St. Mary Peak and Victor Quadrangles (7.5')

MONTANA

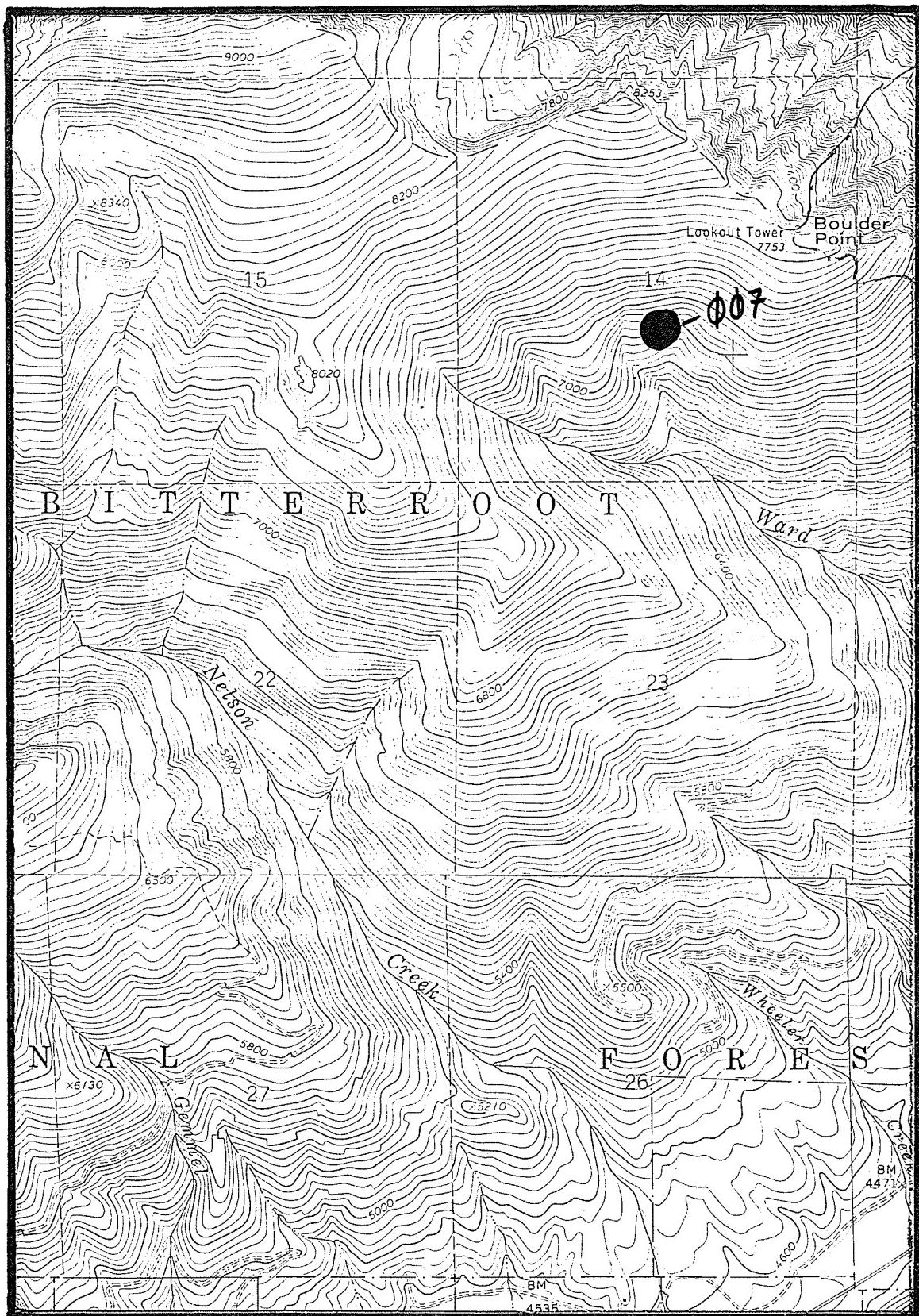


Allotropa virgata

Nelson Creek Ridge (006)

USGS Boulder Peak Quadrangle (7.5')

MONTANA

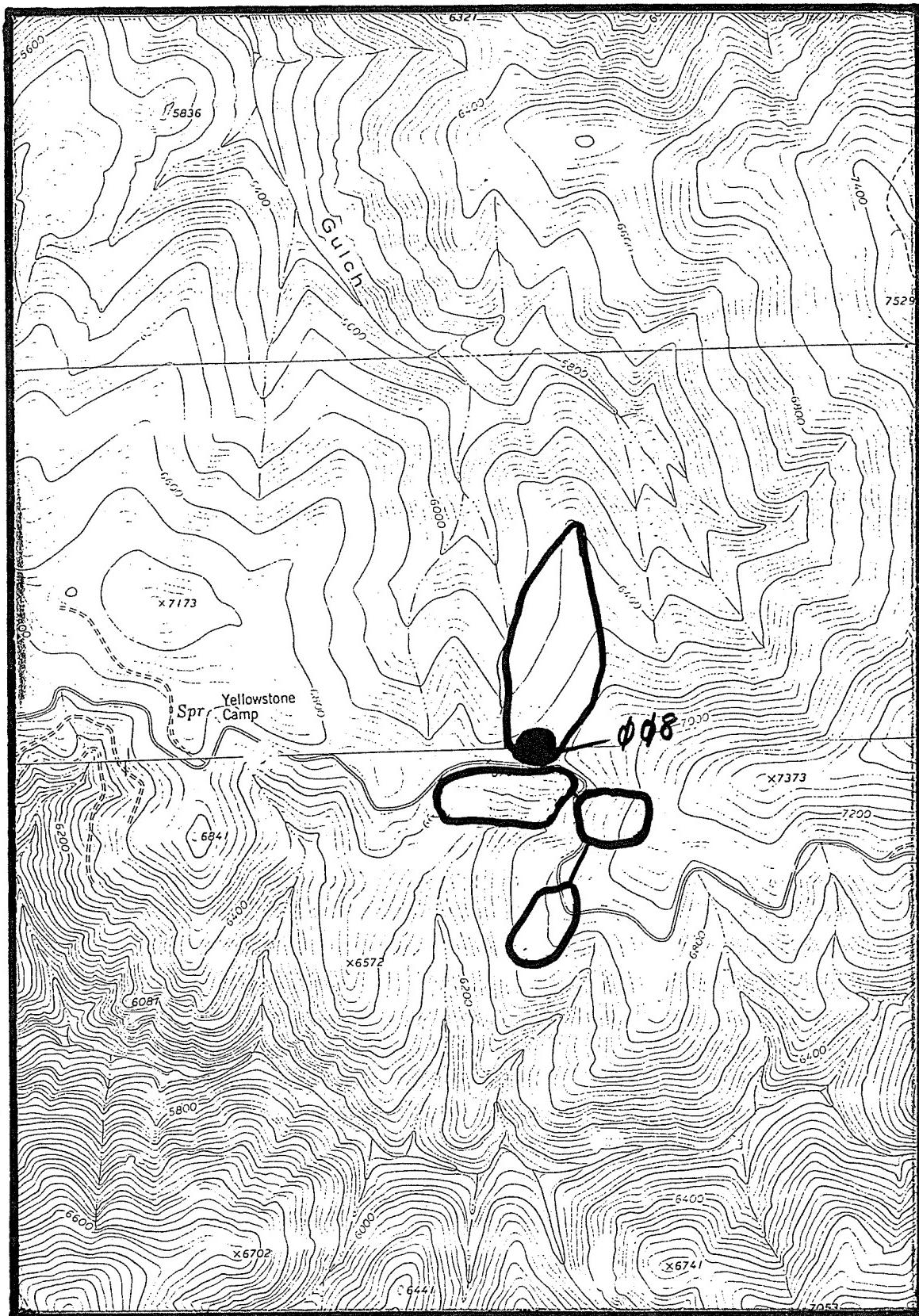


Allotropa virgata

Boulder Point (007)

USGS Boulder Peak Quadrangle (7.5')

MONTANA

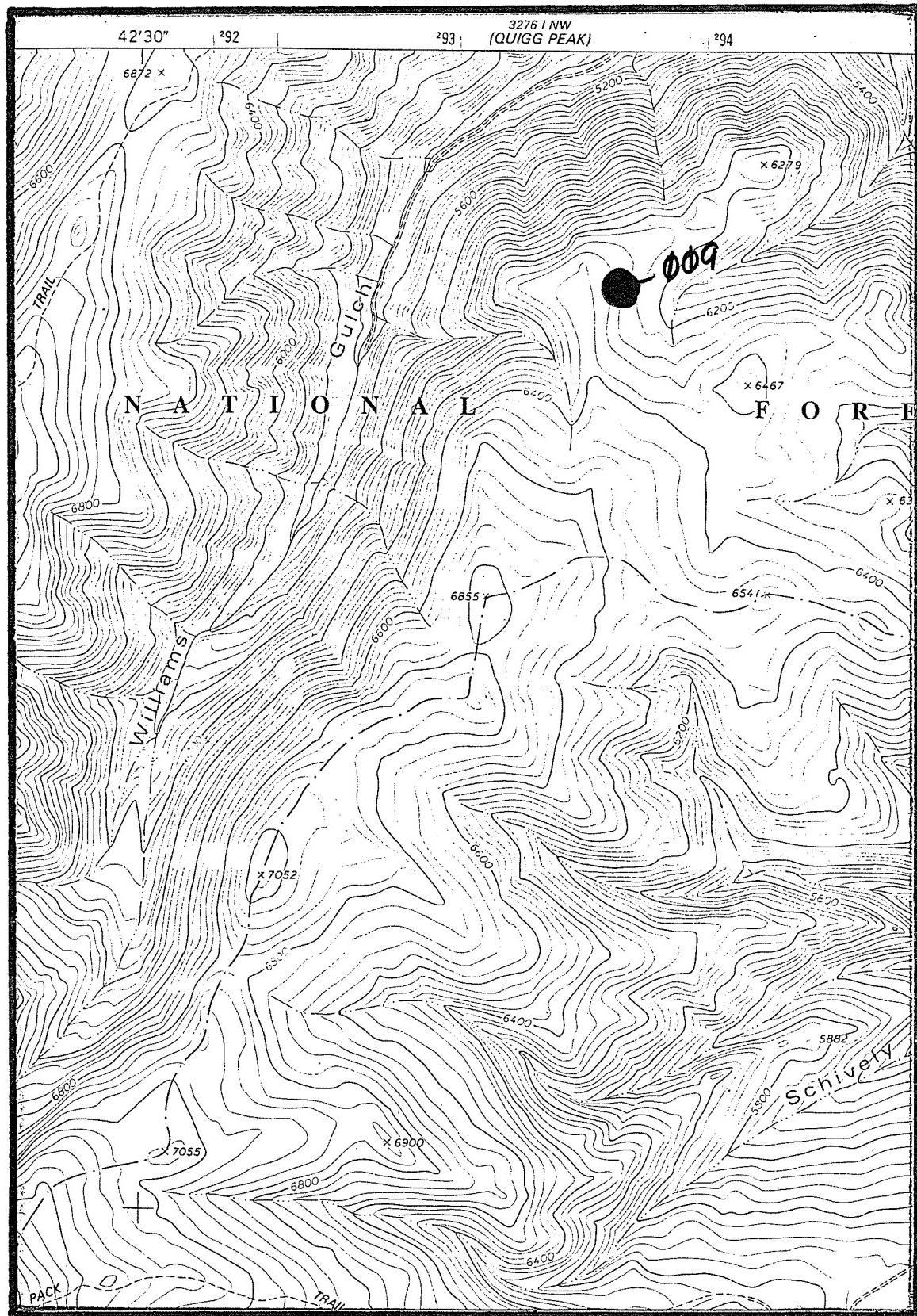


Allotropa virgata

Yellowstone Camp (008)

USGS Gird Point and Bald Top Mountain Quadrangles (7.5')

MONTANA

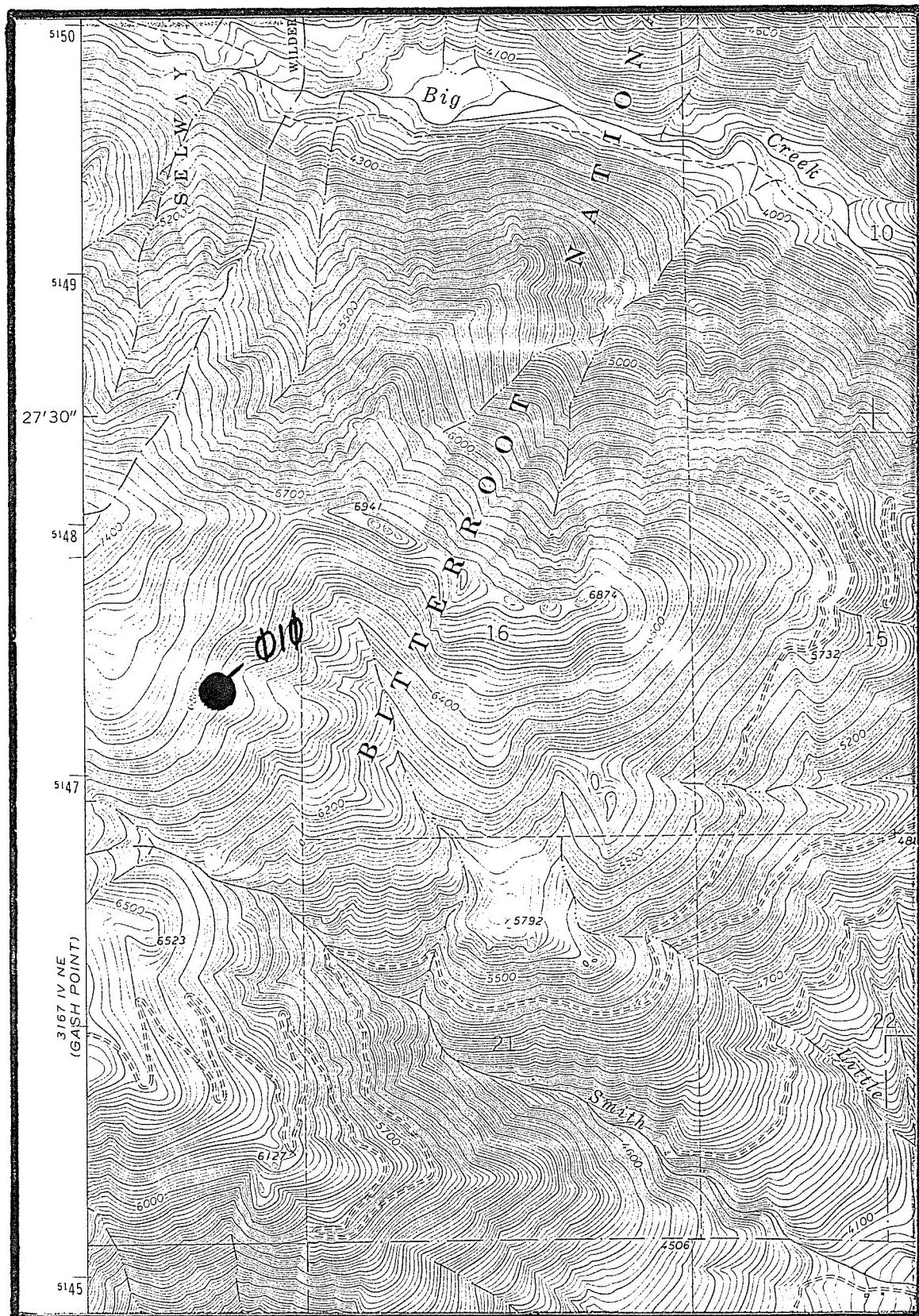


Allotropa virgata

Williams Gulch (Bagdad) (009)

USGS Stony Creek Quadrangle (7.5')

MONTANA

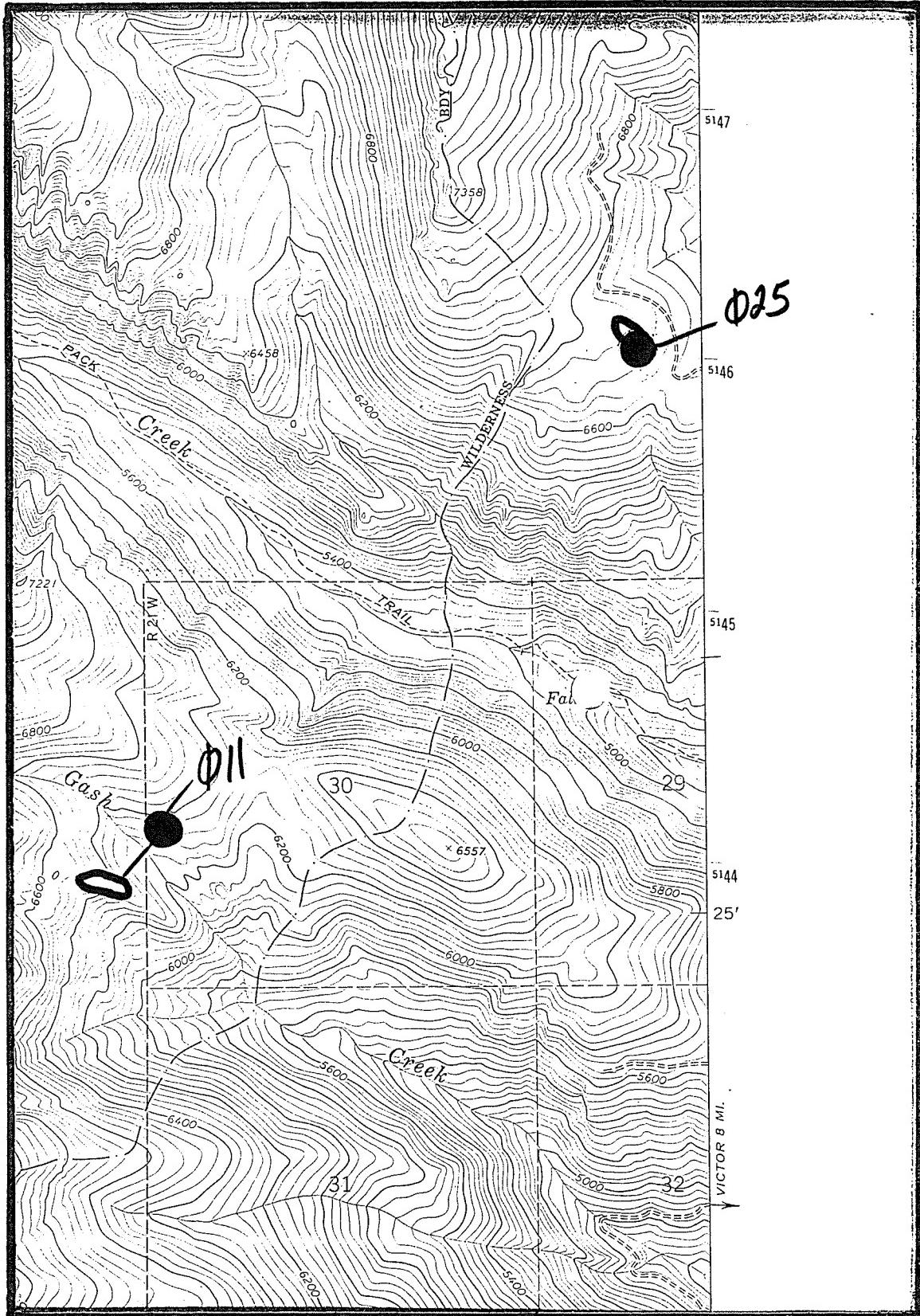


Allotropa virgata

Smith Creek (010)

USGS Victor Quadrangle (7.5')

MONTANA

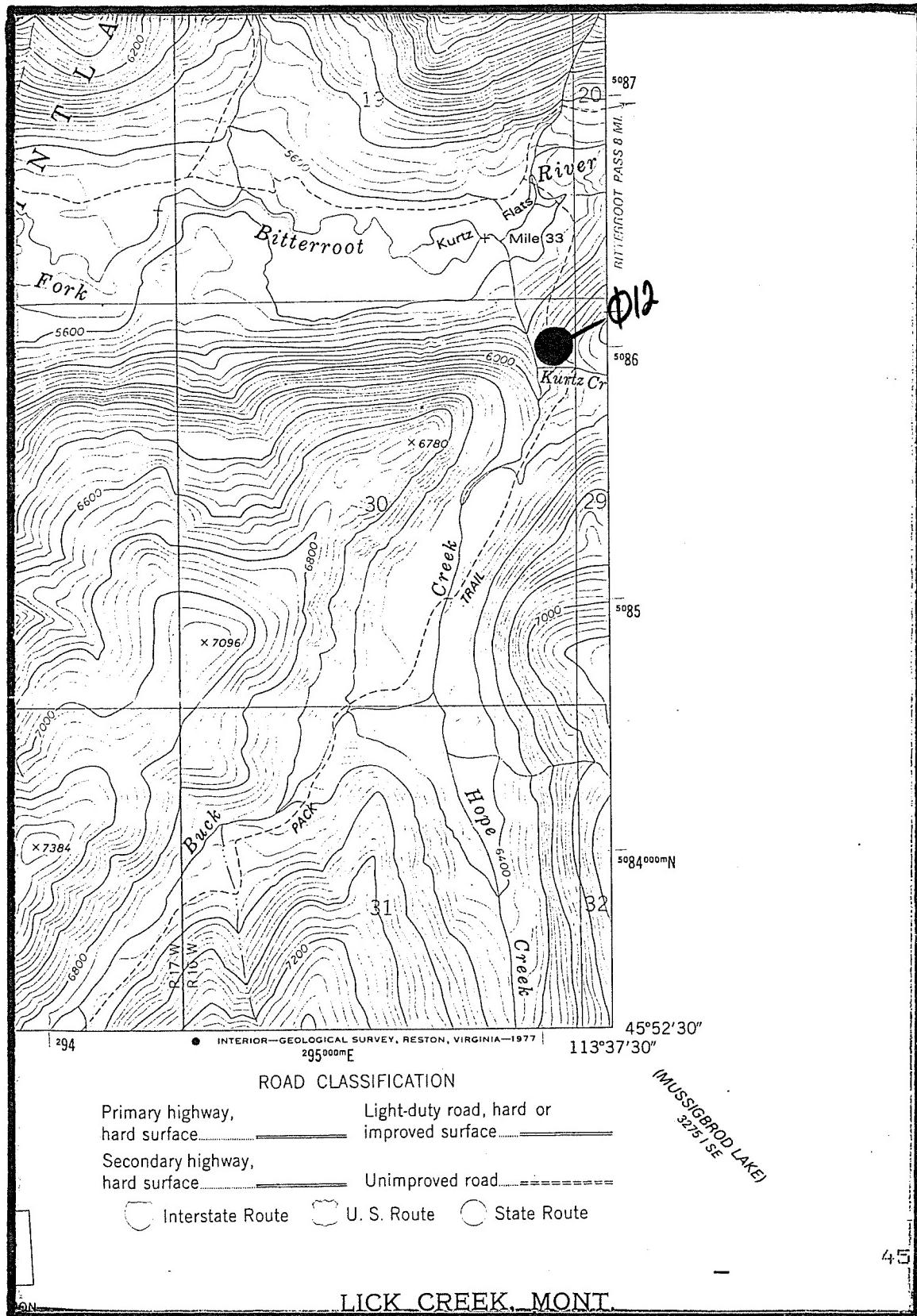


Allotropa virgata

Gash Point (011)
Glen Lake Trail (025)

USGS Gash Point Quadrangle (7.5')

MONTANA

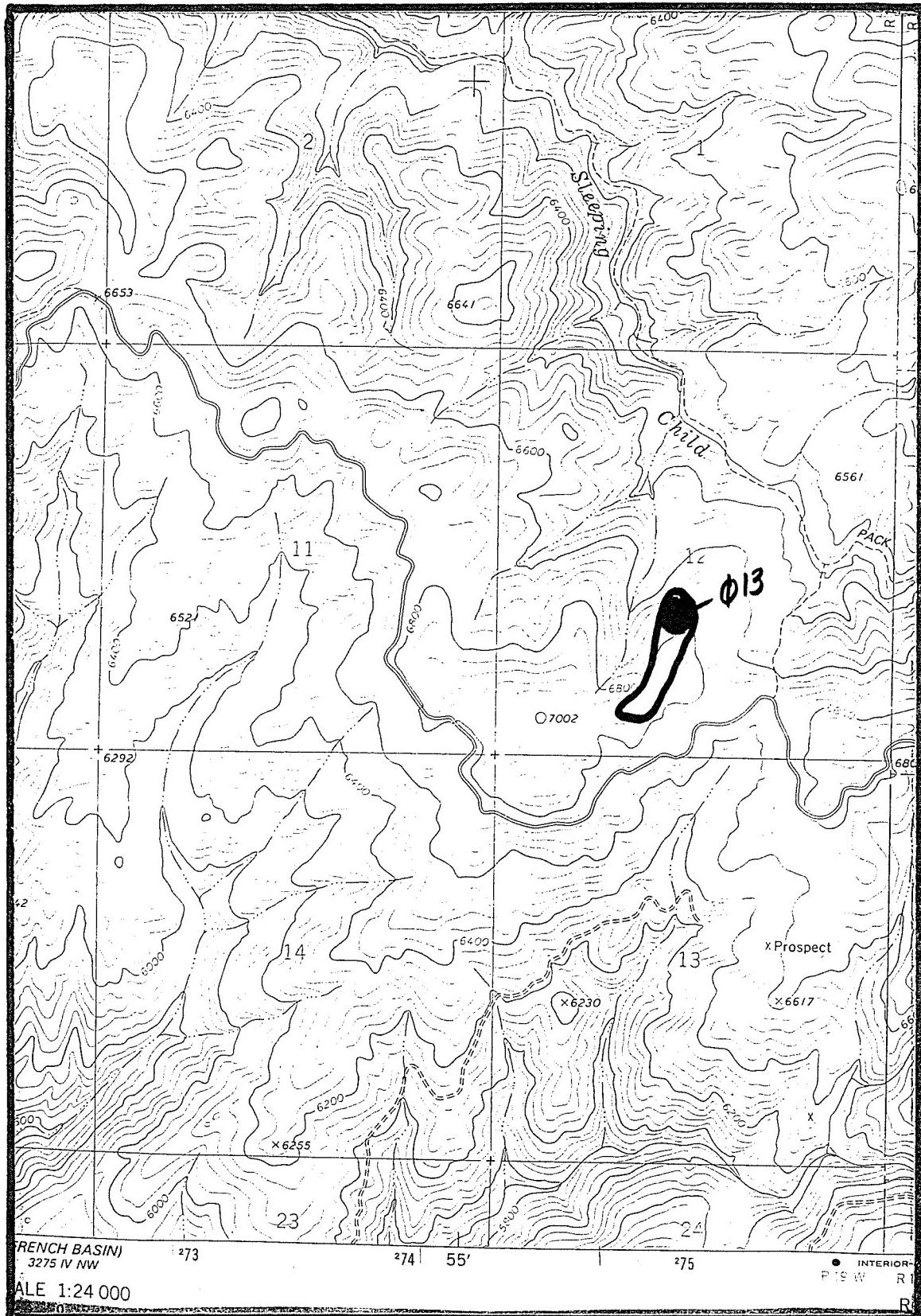


Allotropa virgata

Buck Creek (012)

USGS Lick Creek Quadrangle (7.5')

MONTANA

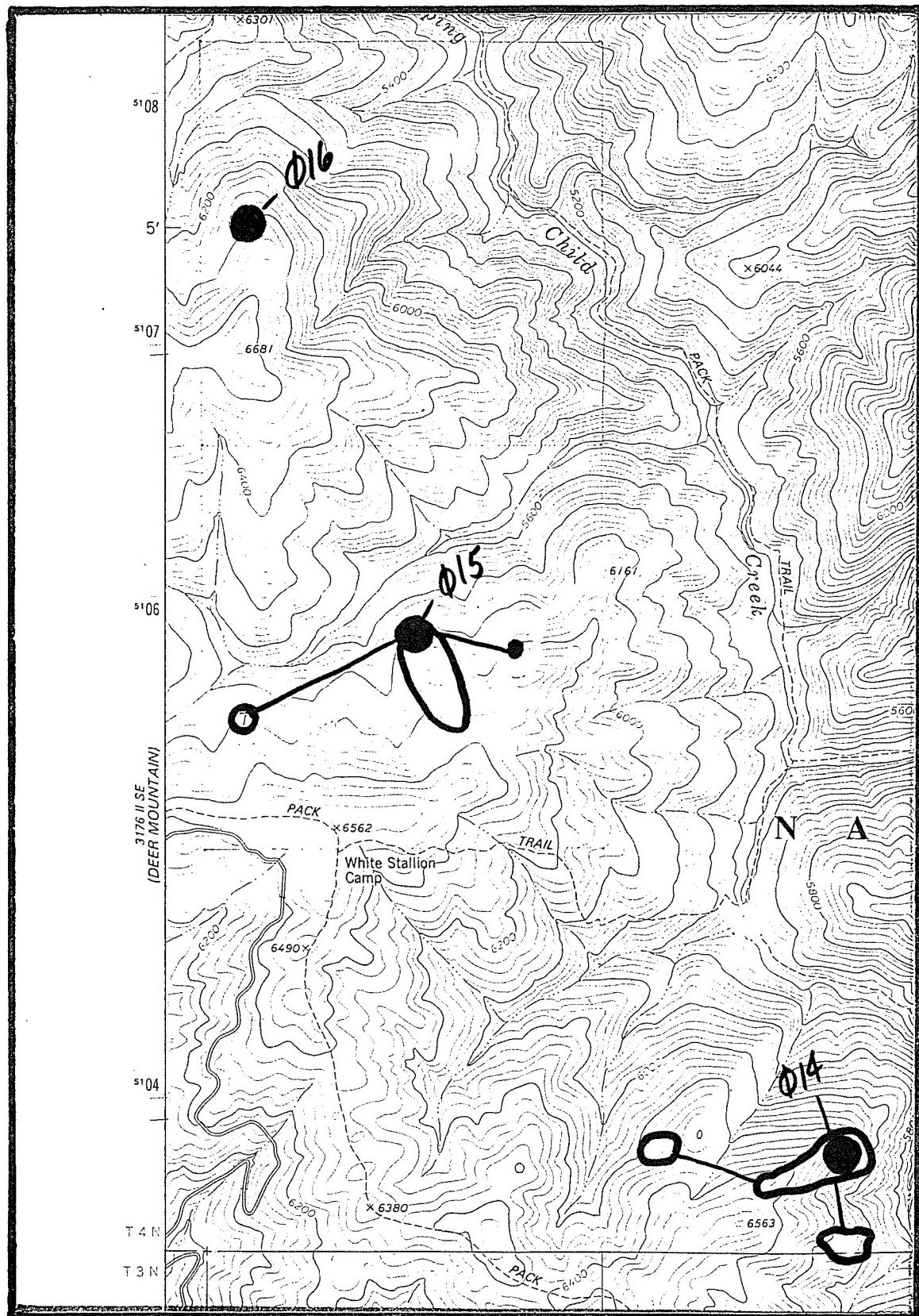


Allotropa virgata

Sleeping Child Creek (013)

USGS Bald Top Mountain Quadrangle (7.5')

MONTANA

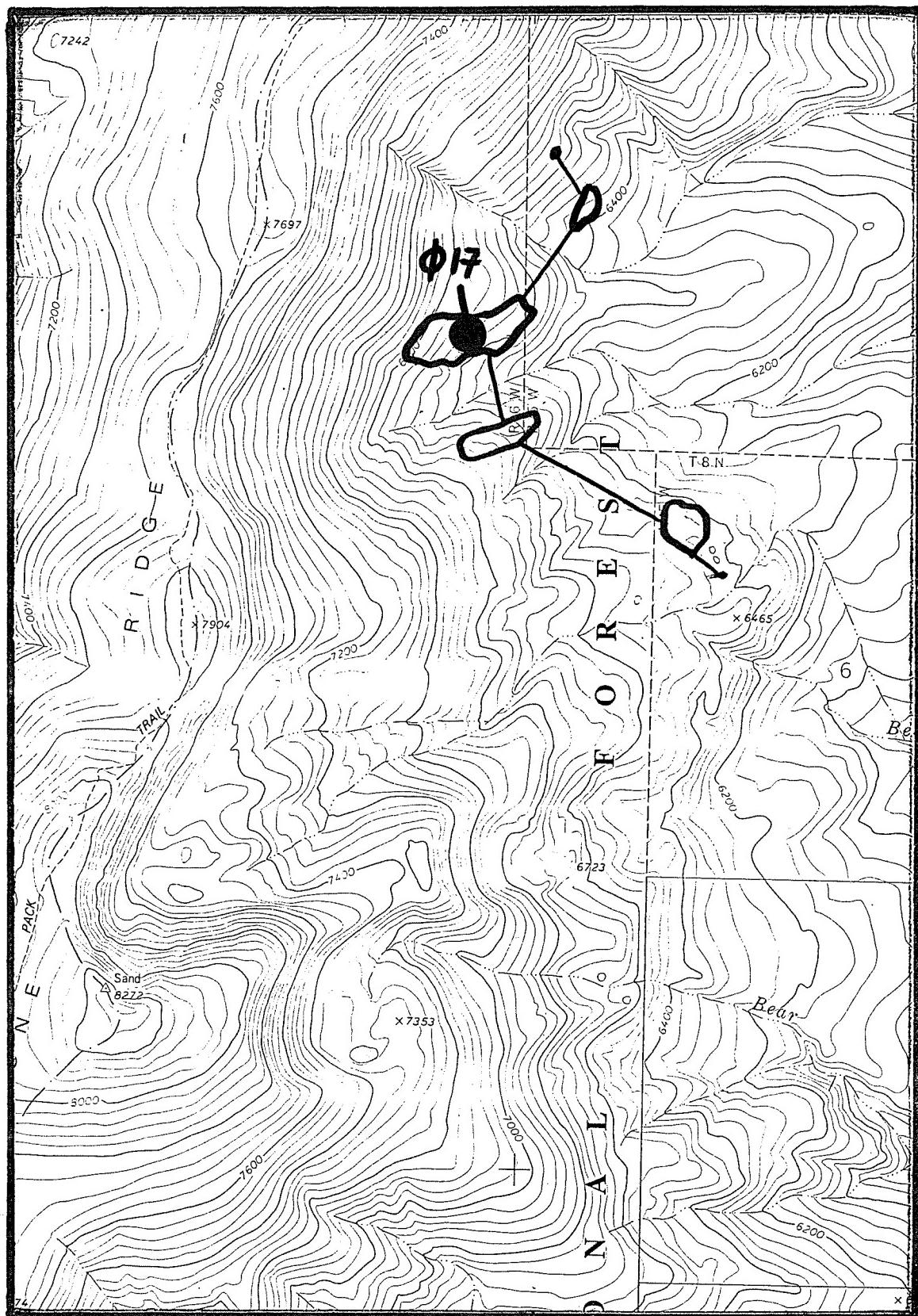


Allotropa virgata

Sleeping Child Creek (014, 015, 016)

USGS Bald Top Mountain Quadrangle (7.5')

MONTANA

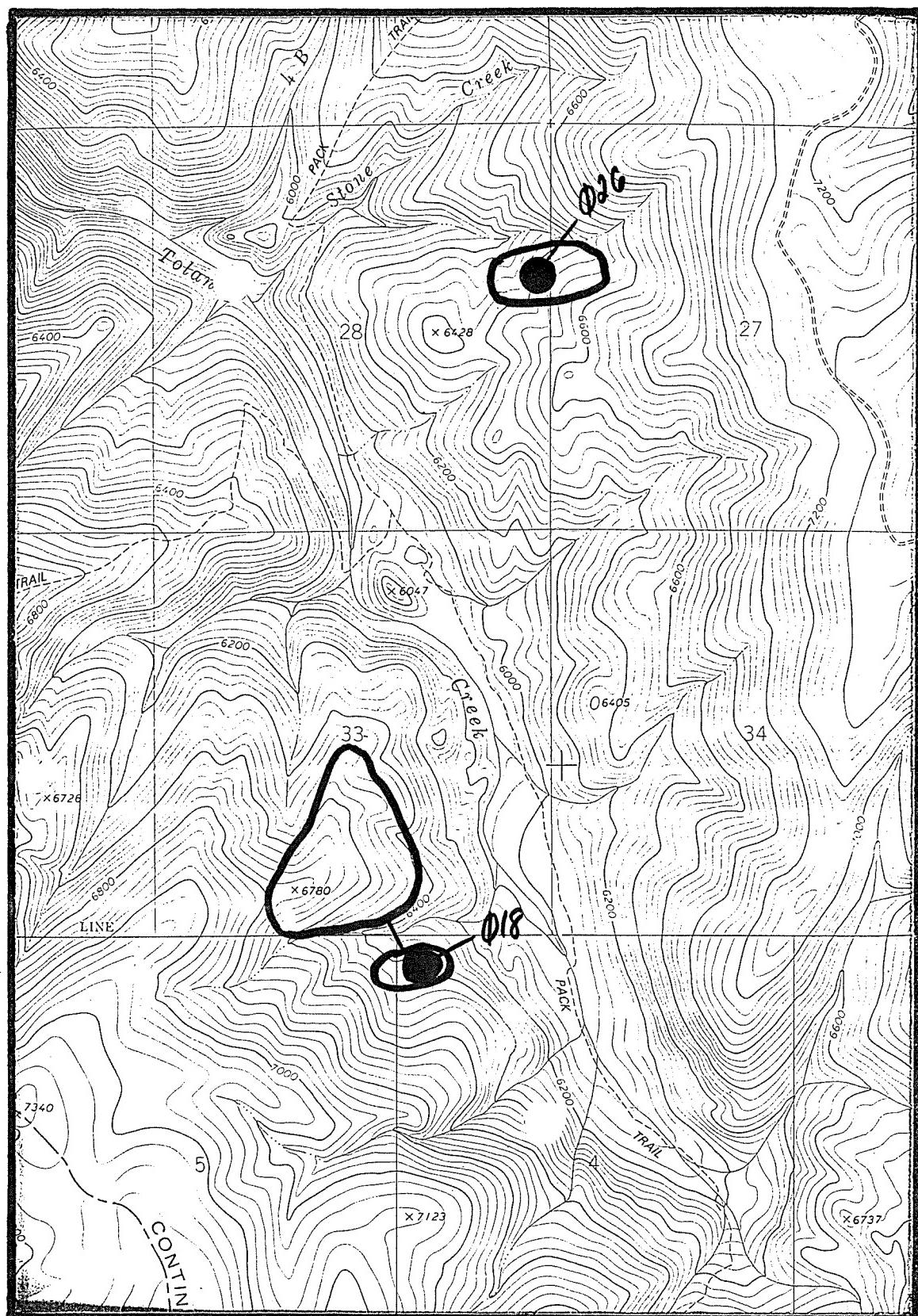


Allotropa virgata

Sandstone Ridge (017)

USGS Alder Gulch Quadrangle (7:5')

MONTANA

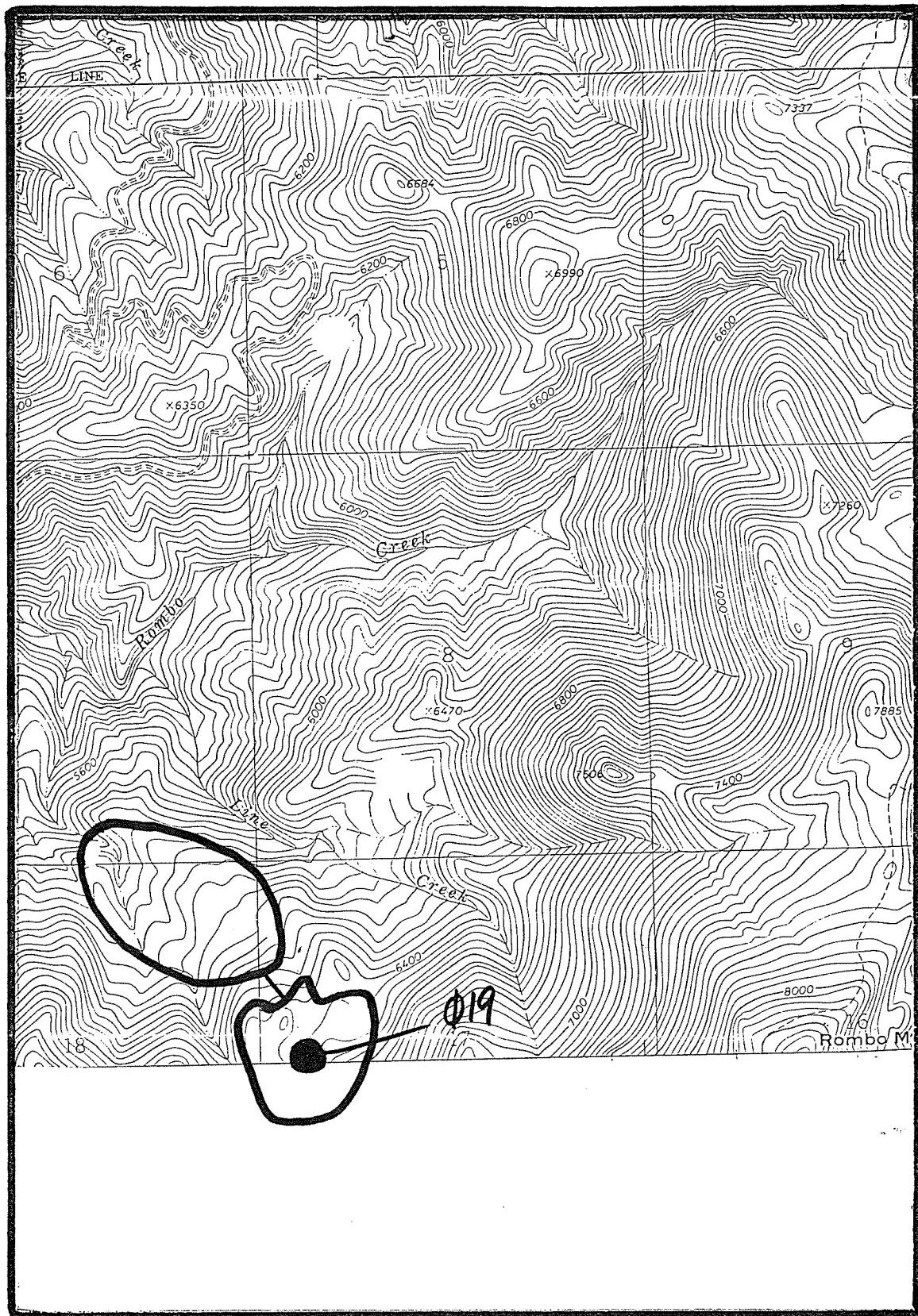


Allotropa virgata

Tolan Creek (018, 026)

USGS Schultz Saddle Quadrangle (7.5')

MONTANA

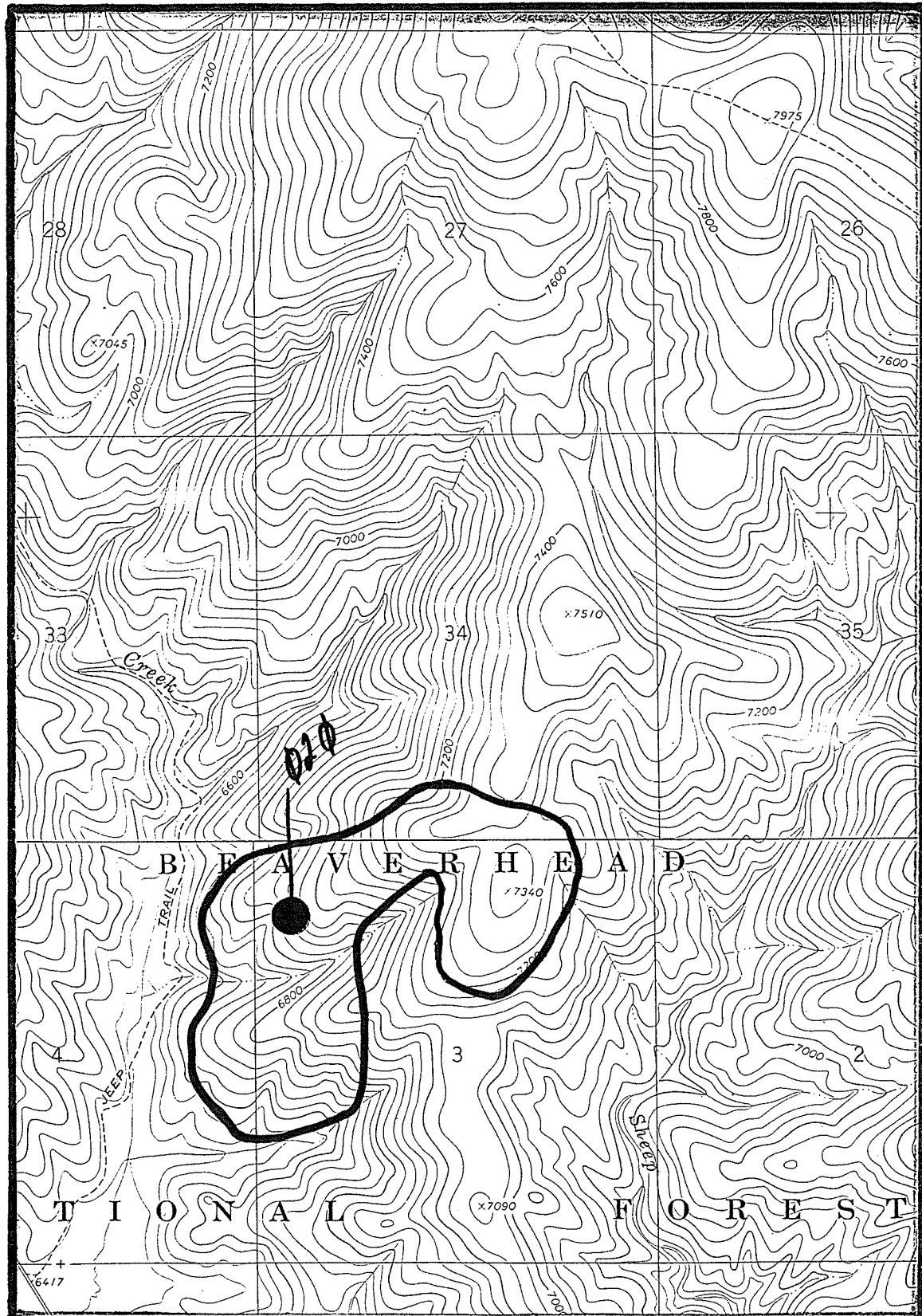


Allotropa virgata

Rombo Creek (019)

USGS Piquett Creek and Piquett Mountain Quadrangles (7.5')

MONTANA

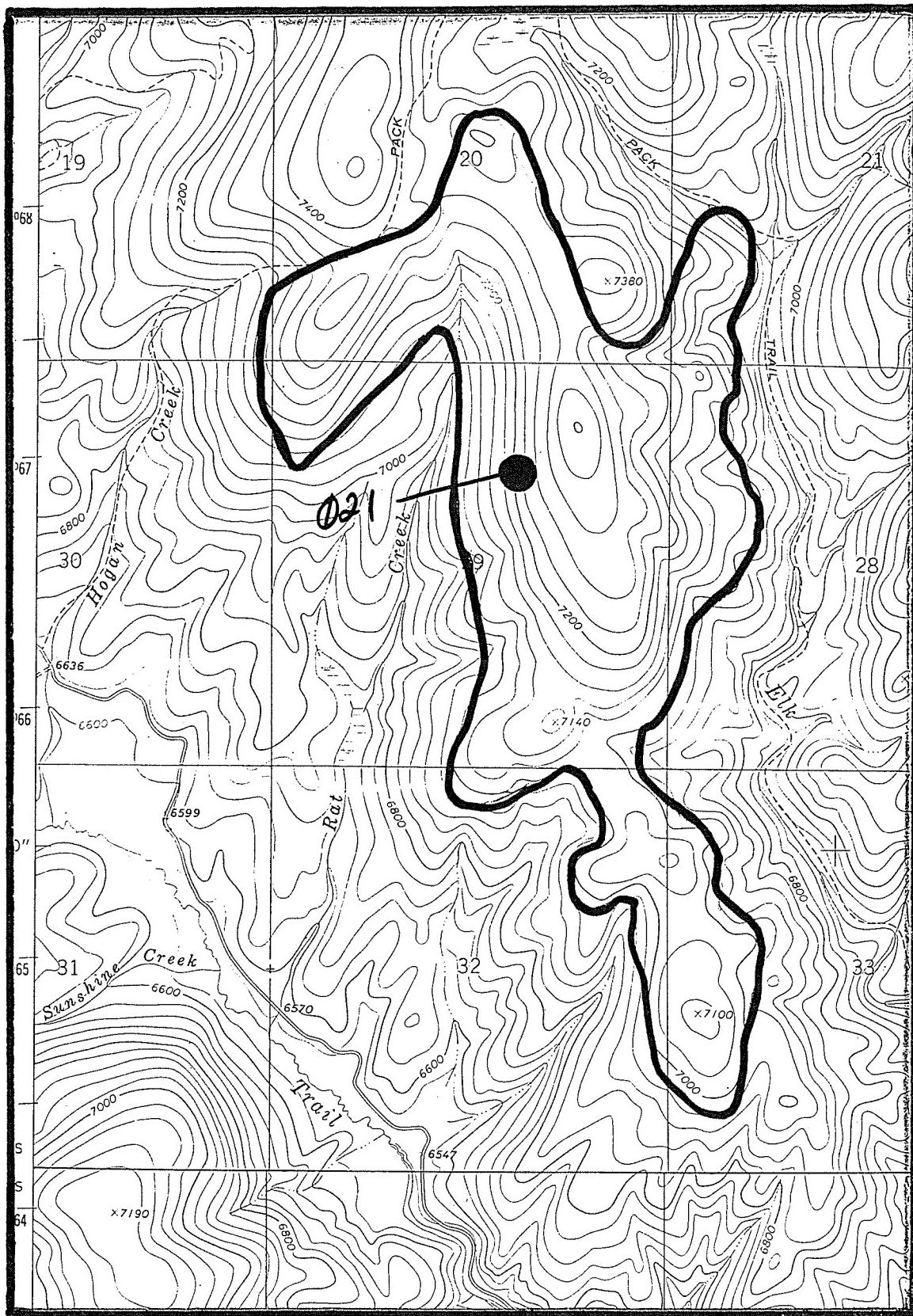


Allotropa virgata

Elk Creek (020)

USGS Elk Creek Quadrangle (7.5')

MONTANA

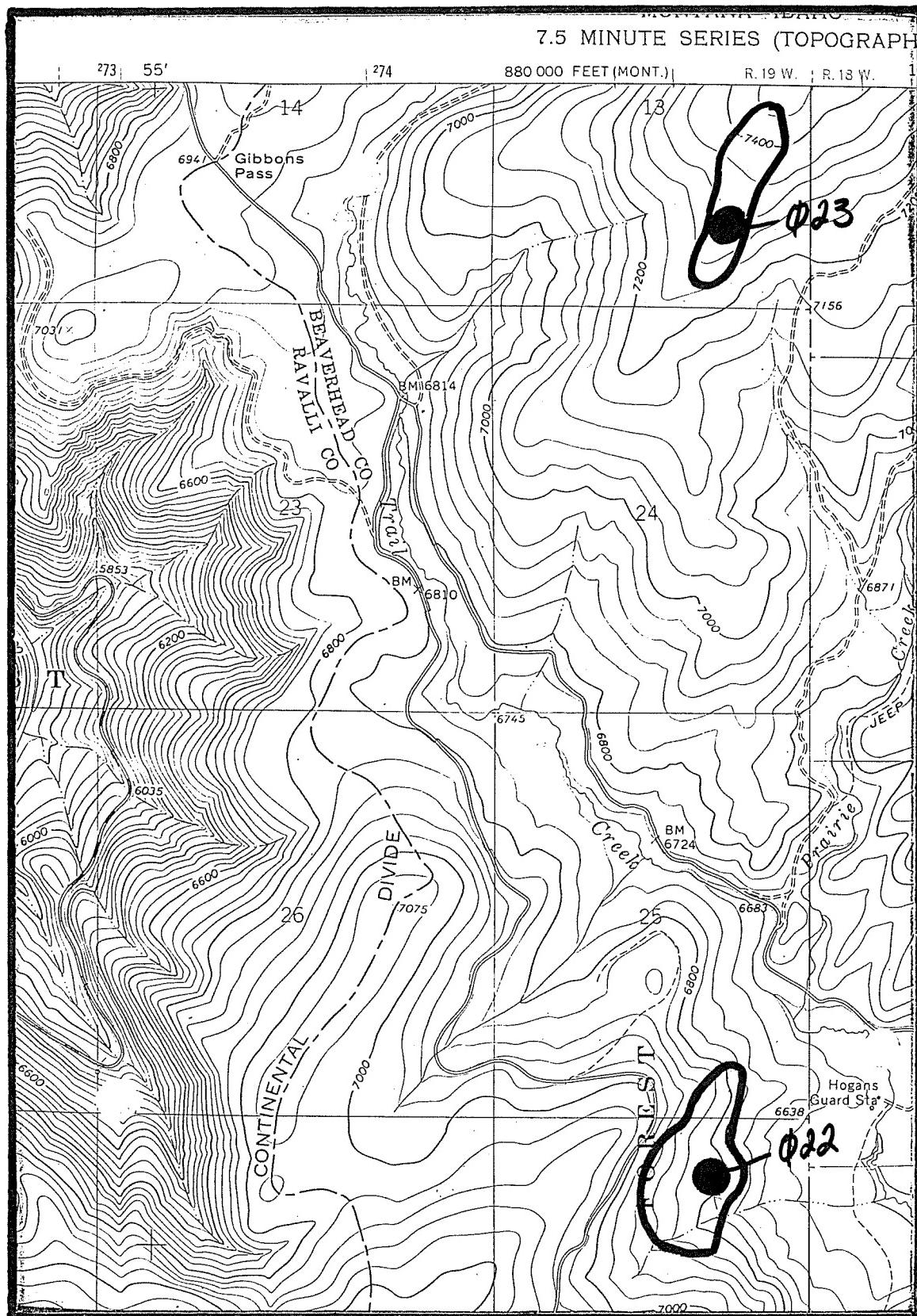


Allotropa virgata

Rat Creek (021)

USGS Elk Creek Quadrangle (7.5')

MONTANA

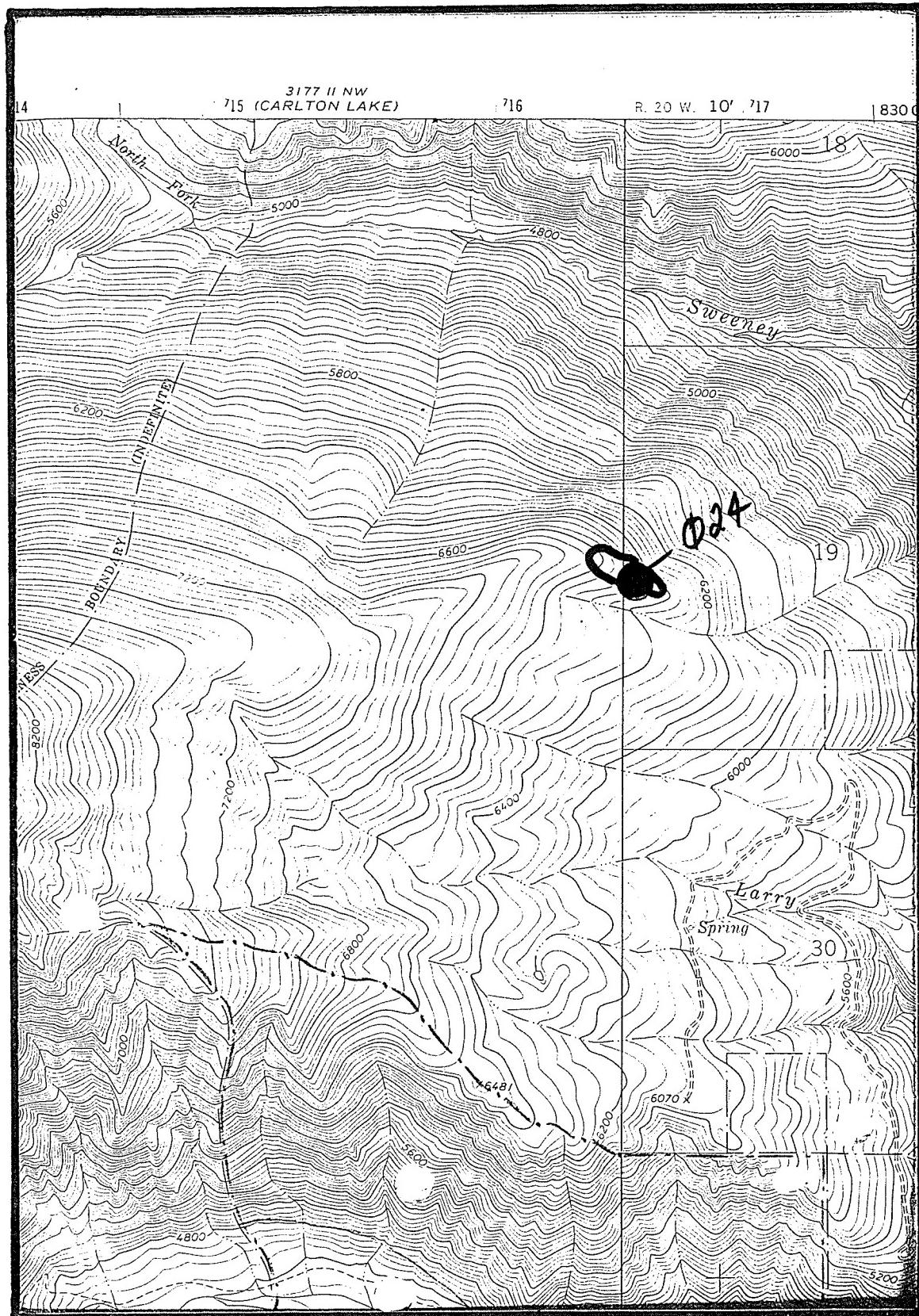


Allotropa virgata

Hogans Guard Station (022)
Prairie Creek (023)

USGS Lost Trail Pass Quadrangle (7.5')

MONTANA

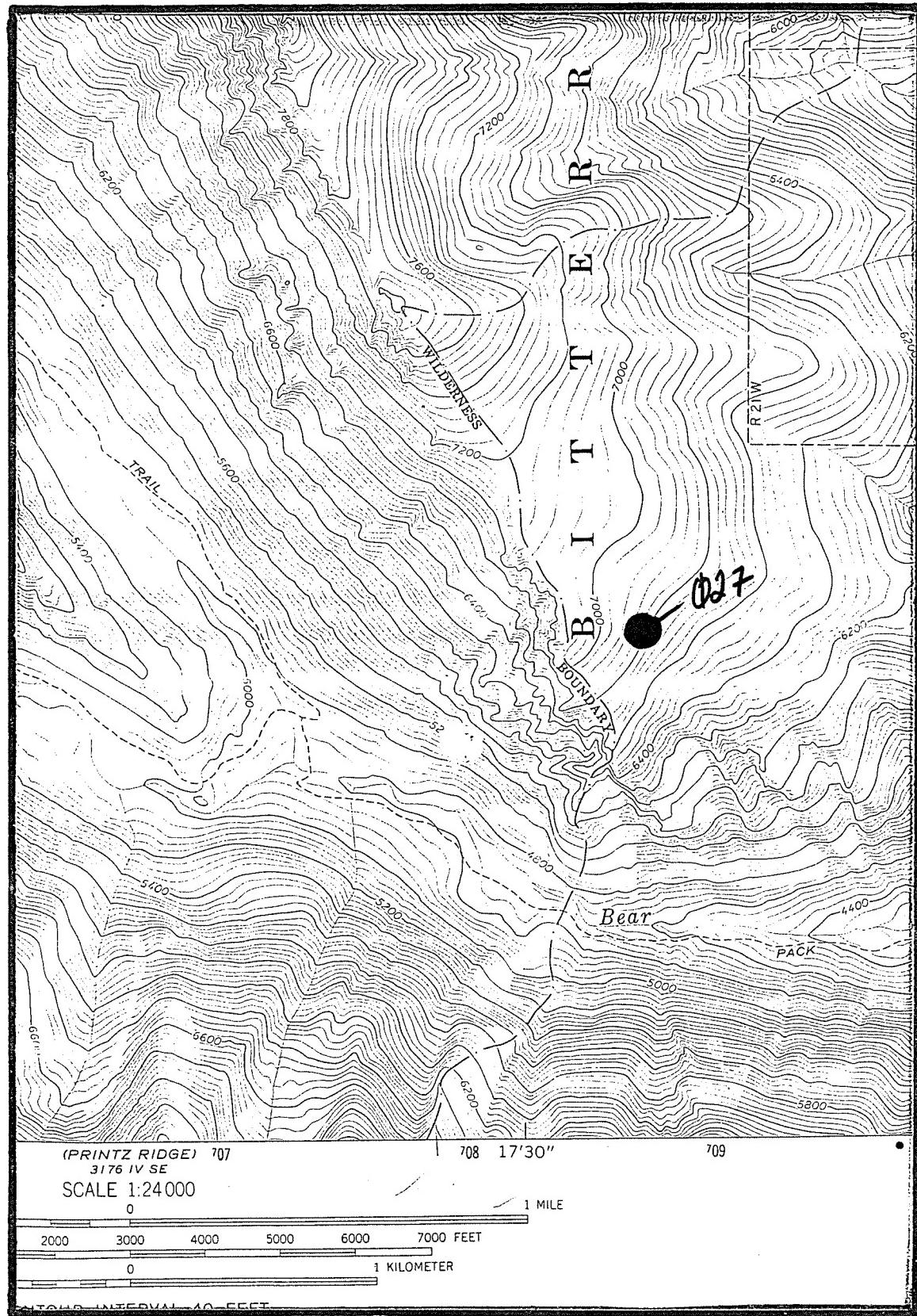


Allotropa virgata

Saint Mary Peak (024)

USGS Saint Mary Quadrangle (7.5')

MONTANA



Allotropa virgata

Bear Creek Overlook (027)

USGS Gash Point Quadrangle (7.5')

VI. PHOTOGRAPHS



A. Allotropa virgata - flowering stem.



B. Allotropa virgata - habit.



C. Allotropa virgata - habitat, Gash Point (011).



D. Allotropa virgata - new (left) and old (right) flowering stems, Saint Mary Peak (005).



E. Allotropa virgata - Lodgepole pine habitat, Saint Mary Peak (005).